PREVALENCE AND FACTORS ASSOCIATED WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER IN CHILDREN AND ADOLESCENTS WITH EPILEPSY

Dissertation submitted to

The Tamil Nadu Dr.MGR Medical University

In-part fulfillment of the requirement for

MD Branch XIX Psychiatry Final Examination to be held in May 2018

CERTIFICATE

This is to certify that the dissertation titled “PREVALENCE AND FACTORS ASSOCIATED WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER IN CHILDREN AND ADOLESCENTS WITH EPILEPSY” is a bonafide work of Dr. Yogendra Singh in partial fulfillment of the requirements for the MD-Psychiatry (Final) examination of the TN Dr.MGR Medical University to be conducted in May 2018.

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DECLARATION

I hereby declare that this dissertation titled “PREVALENCE AND FACTORS ASSOCIATED WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER IN CHILDREN AND ADOLESCENTS WITH EPILEPSY” was prepared by me in partial fulfillment of the regulations for the award of the degree of MD-Psychiatry of the TN Dr.M.G.R Medical University, Chennai.

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Dr. Yogendra Singh

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April 18, 2017

Sub: **Fluid Research Grant NEW PROPOSAL:**
Prevalence and factors associated with Attention Deficit Hyperactivity Disorder in Children and Adolescents with Epilepsy.
Dr Yogendra Singh, Employment Number: 20906, PG Registrar, Department of Psychiatry, Dr. Priya Mammen, Employment Number: 28176, Psychiatry, Dr. Paul S.S. Russell (Emp. No: 12208), Child and Adolescent Psychiatry Unit, Dr. Satya Raj (Emp 20365) Child and Adolescent Psychiatry Unit, Dr. Maya Thomas (Emp. No: 14976), Neurological Science, Dr. Sherab Tsheringla (Emp. No: 28855)Child and Adolescent Psychiatry Unit, Dr. Visalakshi. J (Emp. no: 31093), Biostatistics, Ms. Sushila Russell (Emp. No: 12098), Child and Adolescent Psychiatry Unit, Dr. Shonima Raj (Emp. No: 31459), Child and Adolescent Psychiatry Unit, Ms. Merlin Thanka (Emp. No: 30929), Child and Adolescent Psychiatry Unit, Dr. Stephan A Jiwanmall (Emp. No: 28463), Child and Adolescent Psychiatry Unit, Dr. Sanmitra Dasgupta, (Emp. No: 20872) , Child and Adolescent Psychiatry

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Dear Dr Yogendra Singh,

I enclose the following documents:-
1. Institutional Review Board approval 2. Agreement

Could you please sign the agreement and send it to Dr. Biju George, Addl. Vice Principal (Research), so that the grant money can be released.

With best wishes,

Dr. Biju George
Secretary (Ethics Committee)
Institutional Review Board

Dr. BIJU GEORGE
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Ref: IRB Min. No. 10303 [OBSERV] dated 12.10.2016

Dear Dr Yogendra Singh,

The Institutional Review Board **(Blue**, Research and Ethics Committee) of the Christian Medical College, Vellore, reviewed and discussed your project titled "Prevalence and factors associated with Attention Deficit Hyperactivity Disorder in Children and Adolescents with Epilepsy." on October 12th 2016.

The Committee reviewed the following documents:

1. IRB Application format
2. Cvs of Drs. Maya, Merlin, Priya Mammen, Sanmitra, Satya, Sherab, Shonima, Stephen, Sushila Russell, Visalkshi, Yogendran and Russell.
3. Consent forms and information sheets.
4. No. of documents 1 – 3.

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The following Institutional Review Board (Blue, Research & Ethics Committee) members were present at the meeting held on October 12th 2016 in the BRTC Conference Room, Christian Medical College, Bagayam, Vellore 632002.

Name	Qualification	Designation	Affiliation
Dr. Biju George	MBBS, MD, DM	Professor, Haematology, Research), Additional Vice Principal , Deputy Chairperson (Research Committee), Member Secretary (Ethics Committee), IRB, CMC,Vellore	Internal, Clinician
Dr. B. J. Prashantham	MA(Counseling Psychology), MA (Theology), Dr. Min (Clinical Counselling)	Chairperson, Ethics Committee, IRB. Director, Christian Counseling Centre, Vellore	External, Social Scientist
Dr. Ratna Prabha	MBBS, MD (Pharma)	Associate Professor, Clinical Pharmacology, CMC, Vellore	Internal, Pharmacologist
Dr. Rekha Pai	BSc, MSc, PhD	Associate Professor, Pathology, CMC, Vellore	Internal,Basic Medical Scientist
Rev. Joseph Devaraj	BSc, BD	Chaplaincy Department, CMC, Vellore	Internal, Social Scientist
Mr. C. Sampath	BSc, BL	Advocate, Vellore	External, Legal Expert
Dr. Santhanam Sridhar	MBBS, DCH, DNB	Professor, Neonatology, CMC, Vellore	Internal, Clinician
Mrs. Sheela Durai	MSc Nursing	Professor, Medical Surgical Nursing, CMC, Vellore	Internal, Nurse
Ms. Grace Rebekha	M.Sc., (Biostatistics)	Lecturer, Biostatistics, CMC, Vellore	Internal, Statistician
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Dr. Vivek Mathew	MD (Gen. Med.) DM (Neuro) Dip. NB (Neuro)	Professor, Neurology, CMC, Vellore	Internal, Clinician
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Dr. Sneha Varkki	MBBS, DCH, DNB	Professor, Paediatrics, CMC, Vellore	Internal, Clinician
Mrs. Emily Daniel	MSc Nursing	Professor, Medical Surgical Nursing, CMC, Vellore	Internal, Nurse
Dr. Sathish Kumar	MBBS, MD, DCH	Professor, Child Health, CMC, Vellore	Internal, Clinician
Dr. Inian Samarasam	MS, FRCS, FRACS	Professor, Surgery, CMC, Vellore	Internal, Clinician
Dr. Thomas V Paul	MBBS, MD, DNB, PhD	Professor, Endocrinology, CMC, Vellore	Internal, Clinician

We approve the project to be conducted as presented.

Kindly provide the total number of patients enrolled in your study and the total number of withdrawals for the study entitled: "Prevalence and factors associated with Attention Deficit Hyperactivity Disorder in Children and Adolescents with Epilepsy." on a monthly basis. Please send copies of this to the Research Office (research@cmcvellore.ac.in).

Fluid Grant Allocation:

A sum of 10,000/- INR (Rupees ten thousand Only) will be granted for 12 months.

Yours sincerely,

Dr. Biju George
Secretary (Ethics Committee)
Institutional Review Board

IRB Min. No. 10303 [OBSERV] dated 12.10.2016 4 of 4

URKUND

Urkund Analysis Result

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I.INTRODUCTION

Attention Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder characterized by an ongoing pattern of difficulty paying attention, increased activity and impulsivity, which is not appropriate for age and interferes with functioning and overall development.

Attention deficit hyperactivity disorder (ADHD) is one of the most common neuropsychiatric disorders of childhood and adolescence.

British pediatrician Sir George Frederick Still first described ADHD in 1902 as “an abnormal defect of moral control in children”. In past, ADHD was labeled with multiple terms like minimal brain damage, minimal brain dysfunction, Kramer-Pollnow syndrome, hyperkinetic syndrome or hyperactivity.

Diagnostic and Statistical Manual (DSM) of Mental Disorders was first published in 1952, had no mention of ADHD. The second edition released in 1968 included hyperkinetic impulse disorder for the first time.

As per DSM-5, it can be manifested in any of 18 official symptoms. It can be full-expression (combined type) or partial expression (inattentive or hyperactive-impulsive types). To qualify for the diagnosis, six of the nine inattentive symptoms are required for the diagnosis of the inattentive type and six of the nine hyperactive-impulsive symptoms are required for the diagnosis of hyperactive-impulsive type, with six of each list for the combined type.

Various studies have concluded that the ADHD subtypes provide current levels of inattention and hyperactivity-impulsivity symptoms, but are not sufficient to justify the classification of distinct forms of the disorder in long-term.

The ADHD worldwide prevalence ranges from 5.29% to 7.2% in children and adolescents. A various study conducted in India also document the prevalence in the same range. In India, a systemic review and meta-analysis estimate the prevalence of ADHD to be 6.46%. Most of the children diagnosed with ADHD continue to meet criteria for ADHD as adults.

Despite multiple studies, the etiology and pathogenesis of ADHD are not clear. This complex disorder is the outcome of both environmental and genetic factors. Various adoption, twins and molecular genetic studies support the theory of ADHD being a familial disorder.

ADHD has been observed to be comorbid with a variety of psychiatric disorders which include oppositional defiant, conduct, affective, anxiety, and learning disorders.

Various studies and through the clinical experiences, it is clear that Attention Deficit Hyperactivity Disorder is found in a higher percentage of the pediatric population with Epilepsy. In one multivariate analysis, children with ADHD had almost twice the risk of Epilepsy than children without ADHD. This study supports findings of a strong interrelationship between ADHD and Epilepsy. Disorders of attention may be the most frequent behavioral problems in children with Epilepsy. As found in different studies the prevalence of Attention Deficit Hyperactivity

Disorder in children and adolescents with Epilepsyrange from 20% to 38%.Children and adolescents with unprovoked seizures were found 2.5 fold more likely to have a history of attention deficit hyperactivity disorder in one study. It was also shown that age of onset of attention deficit hyperactivity disorder was earlier in pediatric age group with Epilepsy as compared to without Epilepsy.

Attention Deficit Hyperactivity Disorder and Seizures may be comorbid conditions. That is, the two disorders may occur together owing to a causal relationship between them or owing to an underlying vulnerability to both disorders. Both the disorder effect each other in terms of distribution in gender and age of onset, in terms of medicine used for treating them and current control of symptoms. There are multiple variables affecting the association between these two illness. They need to be studied. It has been shown that attention deficit hyperactivity disorder and Epilepsy can individually effect the learning, social and behavioral development of children. As such these been comorbid in high percentage is expected to have a greater implication on children development in all aspects. Such hyperactivity and appropriate treatment of these problems might improve the scholastic performance.

II.REVIEW OF LITERATURE

II.a. Attention Deficit Hyperactivity Disorder in Children:

Attention Deficit Hyperactivity Disorder (ADHD) is diagnosed in children with a significant problem in maintaining attention, an excessive activity typically with impulsivity and all of this not appropriate for the age. The presentation is rather heterogeneous with variability in the severity of symptoms, the age of onset, dysfunction due to symptoms and comorbid psychiatric disorders associated.

It is one of the most common neuropsychiatric disorder for which children are referred to psychiatric support.

II. a. 1. *History*

Initial references of ADHD dates back to mid nineteen century in the poetry named as “Fidgety Phil” written by German physicians Heinrich Hoffman(1). These poetries were his experiences in medical practice. But the credible scientific focus was first given by Sir George Still in 1902 and he presented 43 cases of children with problems in sustained attention, which he picked from his clinical practice. He believed that these children have a defect in “moral control of behavior”(2). He observed that these children were often aggressive, resistant to discipline, non-obeying and emotional. He concluded that the impairments can be due to a defect of cognitive relation to the environment, inhibitory volition or moral consciousness.

It was observed that various brain diseases like birth trauma, lead toxicity, Epilepsy, head trauma and infections manifested as numerous cognitive impairments and behavioral symptoms which resembled ADHD symptoms. Terms like “Restlessness

syndrome”(3) and “organic drivenness” (4)was being used for such manifestations. Several investigators postulated that these symptoms are the result of pathological defects in the brain structure although gross evidence may not be apparent always. Taking into consideration that no clear evidence of brain damage was found, a new concept on “minimal brain dysfunction” emerged. But, serious questions were raised for such concept as no historical documentation of brain damage was present in such cases. On the other hand, special educational recommendations were made for such brain-damaged children(5), which continues to be a forerunner in current educational plans for ADHD children, even though it lacks scientific support.

In a period from 1935 to 1945 multiple papers appeared which marked the beginning of pharmacological management of these disorders. First being Amphetamine, showed significant improvements.By 1970 stimulants medication became the treatment of choice.

In the 1950s, writers started using term “hyperkinetic impulse disorder” for ADHD and a number of investigations were done for understanding the neurological mechanism resulting in these behavioral symptoms. They believed that the central nervous system deficit occurred in the thalamic area, where the stimulations were not adequately filtered and thus led to increased stimulation of the brain. These were supported by a study of the effects of “photo-metrol” method(6).Others studies at same period showed that imbalance between cortical and subcortical areas of the brain was the cause of these behaviors. The diminished control of subcortical areas

permitted overstimulation of cortex(7). So it was clear that concept of brain damage syndrome as a cause of hyperactivity was well accepted till that period.

But in the 1960s the validity of the concept of brain damage in children with such behavior was questioned again. It was eventually recognized as vague, over-inclusive and without much neurological evidence.

As the dissatisfaction for the term “minimal brain dysfunction” grew, the emphasis was shifted to most characteristic behavior symptom that is hyperactivity. Thus lead to the concept of hyperactivity syndrome.

Chess defined the hyperactive children as those who carry out activities at a higher speed than normal rate as of the average child or who are continuously in motion, or both. Chess emphasized activity as the defining feature of the disorder rather than underlying neurological causes. He stressed to consider objective evidence of the symptom beyond the subjective reports of others, took the blame away from the parents and separated the syndrome of hyperactivity from the brain damage syndrome(2). It was now recognized that hyperactivity was a behavioral syndrome that can arise from organic pathology, but not necessary.

The American Psychiatric Association (APA) did not recognize ADHD in the first edition of Diagnostic and Statistical Manual of Mental Disorder (DSM). The second edition DSM was published in 1968. This edition included hyperkinetic impulse disorder for the first time and described the disorder as characterized by over-activity, restlessness, distractibility, and short attention span, especially in younger

children which usually diminishes by adolescence(8). It took the lead of Chess and stressed that the disorder was developmentally benign.

In the early 1970s, the defining features of hyperactivity were broadened to include impulsivity, short attention span, low frustration tolerance, distractibility, and aggressiveness(9).

At the start of the 1970s, Wender described the essential psychological characteristics of children with minimal brain dysfunction as consisting of motor behavior, attention and perceptual-cognitive functioning, learning, impulse control, interpersonal relations, and emotion. But later it was realized that

Wender was combining the symptoms of oppositional defiant disorder and conduct disorder with those of ADHD to form a single disorder. Sufficient evidence, however, shows that ADHD and ODD are not the same disorder.

By early 1990s it was highly supported that hyperactivity was not caused by brain damage. It was advocated that true brain damage did not display a uniform pattern of behavioral deficits and children with hyperactivity rarely had evidence of neurological damage.

The exclusive focus on hyperactivity as the only characteristic symptom of this disorder was always questioned (10). Virginia Douglas in 1972 argued that deficits in sustained attention and impulse control were more likely than just hyperactivity to account for the difficulties faced by ADHD children. Douglas observed that hyperactive children did not necessarily have more learning disabilities, auditory or right–left discrimination problems or difficulties with short-term memory as

compared to other children(11). Douglas and Susan Campbell demonstrated that hyperactive children were not always more distractible and that the sustained attention problems could emerge without significant distractions in the environment. Gabrielle Weiss in her follow-up studies observed that although the hyperactivity often diminished by adolescence, poor sustained attention and impulsivity persisted. Douglas research work leads the disorder being renamed Attention Deficit Disorder (ADD), with or without Hyperactivity in 1980 with the publication of DSM-III(American Psychiatric Association, 1980)(12).In this revision deficits in sustained attention and impulse control were given more significance in the diagnosis than hyperactivity. This was supported by growing evidence that hyperactivity was not specific to this particular condition, that the symptoms were quite situational and that there was no clear delineation between normal and abnormal levels of activity. The DSM-III diagnostic criteria was noteworthy not only for their greater emphasis on inattention and impulsivity but also for much more specific symptom lists. In the next revision DSM-III-R (13)(American Psychiatric Association, 1987), the criteria for only the diagnostic criteria for ADD with Hyperactivity were stipulated. ADD without hyperactivity was relegated to a minimally defined category. In DSM-IV released in 1994 (14)the diagnosis was slipped into three subtypes, ADHD inattentive type, ADHD hyperactive-impulsive type and ADHD combined type. These terms were continued in the DSM-5 released in 2013(12) In 1937, psychiatrist Charles Bradley administered Benzedrine sulfate, an amphetamine, to “problem” children at the

Emma Pendleton Bradley Home in Providence, Rhode Island, in an attempt to alleviate headaches; however, Bradley noticed an unexpected effect upon the behavior of the children: improved school performance, social interactions, and emotional responses.

In 1937, psychiatrist Charles Bradley administered Benzedrine sulfate, an amphetamine, to children with a behavior problem in an attempt to alleviate headaches caused by performing pneumoencephalograms. He was working at the Emma Pendleton Bradley Home in Providence, Rhode Island at that time. Bradley observed an improvement in school performance, social interactions, and emotional responses in these children(15). Bradley was surprised at this unexpected effect especially for a drug known to be a stimulant. It should be noted, however, that the higher levels of the central nervous system have inhibition as their function, and that stimulation of these portions might indeed reduce activity(16). Bradley's observations of stimulant effects were revolutionary.

Methylphenidate was first synthesized in 1944 by Leandro Panizzon is a piperazine substituted phenylisopropylamine that is traditionally related to amphetamine. It was initially used in the treatment of chronic fatigue, lethargy, depressive states, psychosis associated with depression and narcolepsy, but it's most impressive effect has been the reduction of symptoms of ADHD. Methylphenidate is regarded by now as the most effective psycho-stimulant and used for ADHD management

II.a. 2. ***Primary symptoms***

Inattention:

By definition, children and adults who have ADHD display difficulties with attention relative to normal children or other control groups of the same age and gender. Though critics of ADHD point that these are just subjective opinions having no reality Studies on contrary to this, using direct observations of child behavior find that off-task behavior or poor attention to work is recorded significantly more often for children and adolescents with ADHD as compared to those with learning disabilities or without disabilities(17). The construct of attention is multidimensional and include alertness, arousal, selective focus, sustained attention, and distractibility(18). ADHD is not associated with significant difficulties with automatic orienting to visual information, mediated by posterior brain attention circuits(19) Instead, children and adolescents with ADHD face difficulty sustaining their attention to tasks(20). Distractibility is other problem behavior, which is the likelihood of responding to the occurrence of extraneous events unrelated to the task. This symptom is significantly elevated in ADHD. Distractors within the task will be more disruptive than those outside the task. Distractibility depends on the cognitive loading or difficulty of the task. The attention appears to be diminished persistence of effort or sustained responding to tasks that have the little intrinsic appeal or minimal immediate consequences for completion. Such children spend much more time engaged in off-task. In another subset of children with ADHD, predominantly inattention type manifest as hypo-activity, lethargy, and

daydreaming. Evidence suggests that there are two distinct dimensions of inattention. The first dimension is well established set of inattentive symptoms and primarily reflecting distractibility. The second dimension reflects a more day-dreamy quality, more passive and lethargic in form.

Impulsivity and Hyperactivity:

The second dimension of symptoms is poor inhibition and associated hyperactivity (21). Patients with ADHD respond quickly without waiting for instructions to be completed or adequately appreciating the situation, as a result, end up doing careless errors. They fail to judge the potentially negative, destructive, or even dangerous consequences of their behaviors and thus often engage in unnecessary risk-taking. Consequently, accidental poisonings and injuries are common presentations. They may carelessly damage or destroy property. As result of aforesaid behavior, they are considered to be one with poor self-control, irresponsible, immature, lazy, and rude due to which these children often experience punishment, criticism, and censure.

Impulsivity is multidimensional in nature (22). It involves constructs of executive control, delay of gratification, effort, even compliance, motivation, and automatic attention inhibitory processes. ADHD involves the poor executive functioning and sustained inhibition. Patient is unable to delay a response or defer gratification(23) Children with ADHD have problem with delay aversion, that is they find waiting to be aversive, and hence act impulsively to terminate the delay((24)

A lot of authors believed that poor effortful regulation and inhibition of behaviors, in fact, the hallmark of ADHD(25). They noticed that inattention does not distinguish children with ADHD from those with other clinical disorders or normal children. On the other hand hyperactivity, impulsivity, disinhibition, and poor regulation of behaviors are stronger in distinguishing them. The discriminant-function analysis showed that the symptoms of impulsive error and excessive activity level best discriminate children with ADHD from those without ADHD (26). Similar supportive evidence was derived from the field trial of the DSM-III-R symptom list which revealed that symptoms characteristic of dis-inhibition, such as poorly regulated activity and impulsivity, were more likely to discriminate children with ADHD from those without. The evidence available is sufficient to conclude that behavioral dis-inhibition is the hallmark of ADHD and not inattention. Studies have also suggested that there is a higher incidence of ADHD among biological relatives of children with ADHD who have significant problems with inhibition(27).

Hyperactivity: Children with ADHD are shown symptoms of excessive or developmentally inappropriate higher levels of activity, which can be motor or vocal. They present with Restless-ness, fidgeting, and unnecessary gross bodily movements commonly, as reported by parents and teachers and in objective measures. These excessive movements are often not relevant to the task or situation, and often seem to have no purpose. Numerous scientific studies using Objective measures of activity level used in various studies show that children with ADHD

are more active, restless, and fidgety throughout the day and even during sleep, as compared to normal children (28). Measures based on ankle movement, locomotion, wrist activity and total body motion seem to differentiate them from nondisabled children.(29) Objective measurement of activity level during tasks requiring sustained attention reveals that these children move their heads and bodies more than normal ones. These children move further away from their chairs and cover a greater spatial area in doing so. Their movement is more complex in the pattern(30). It was also observed that overall symptoms fluctuated significantly with the situation(31). They fail to regulate their activity level to setting or task demands which is socially problematic in addition to just increased absolute level of movement. There is some evidence that these symptoms at times increase in frequency in under-stimulating environments and decrease when stimulation is added to the situation, and thus hyperactivity can be a form of stimulations. (32)

Some authors believe that the pervasiveness of the hyperactivity across different settings is important for diagnosing ADHD. While the others believe that the distinction may have more to do with the sources of information than situational pervasiveness(33).

As noted earlier in the various articles that hyperactivity-impulsivity rather than inattention, that best distinguishes ADHD from other clinical conditions and from normal children. Hence, a greater weight can probably be given to the impulsive–hyperactive behavior characteristics than to inattention in clinical delineation(2).

Adults with ADH present mostly with the difficulties with fidgeting, a subjective sense of restlessness, and excessive speech, in comparison with children who present with more gross motor over-activity characteristic.

II.a. 3. Cognitive and Developmental Problems with ADHD:

Children with Attention-Deficit Hyperactivity Disorder besides facing the core symptoms of inattention, impulsivity, and over-activity may have a variety of other difficulties. They have higher chances of having other cognitive, developmental, academic, and health-related problems. Though all such children do not show such problems, ADHD children show a higher prevalence of these problems than expected in typical children.

Intellectual Development:

Children with ADHD show poor intellectual performance as compared to either normal children or their own siblings do on standardized intelligence tests (34). This association is stronger in children than adults but even in adults is significant (35). Despite this association between intellectual deficit and ADHD, children with ADHD are likely to represent the entire spectrum of intellectual development.

The impairment in behavioral inhibition and executive functioning in children with ADHD could be an explanation for the inverse relationship between ADHD and IQ. Intelligence depends on executive functions of working memory, internalized speech, and verbal thought developed and all of these are disturbed in ADHD. It

was observed in various studies that both normal children and children with behavioral problems have significant negative associations between hyperactive-impulsive behavior and measures of intelligence. But no such clear associations had been found between conduct problems and intelligence (36).Thus suggesting that the hyperactive-impulsive element of the disruptive behavior can be attributed to the inverse relationship between IQ and disruptive behavior in children.

IQ studied in children with ADHD and their normal siblings suggest that ADHD has an inherent association with diminished IQ (37).

Adaptive Functioning:

It refers to the actual performance of the daily activities which are required to fulfill personal and social needs. Several studies have consistently documented deficits in adaptive functioning in children with ADHD explaining poor long-term prognosis, suggesting the need for assessment and treatment of adaptive functioning in such children(38). Children with ADHD generally have average intelligence but often function in the low-average to a borderline range of adaptive functioning. Such a disparity probably reflects a discrepancy between ability and performance. As compared to other psychiatric and developmental disorder, children with ADHD show a greater discrepancy between adaptive functioning and IQ. Other supportive studies report that the adaptive functioning in the children with Pervasive Developmental Delay or Intellectual Disability, or normal children were observed to be relatively consistent with their level of intelligence. Other studies reported that comorbid learning disabilities and behavior problem does not seem to significantly

affect this disparity.A separate study shows poorer adaptive communication skills associated with ADHD relative to Oppositional Defiant Disorder or Conduct Disorder, or normal children.

Academic Performance:

Most of the children with ADHD are doing poorly at school. Their performance is low relative to their known levels of ability, which is believed to be due to their inattentive, impulsive, and restless behavior in the classroom. Multiple studies demonstrate significant improvements in academic performance when children with ADHD are on stimulant medication(39). This can be accepted as evidence that children with ADHD have a poor academic performance by the virtue of disorder itself. Children with ADHD are also likely to show performances on various standardized achievement tests.(40) These deficits may include reading, arithmetic, spelling, and comprehension. A meta-analysis concluded that ADHD is associated with large decrements in academic performance(34).

While other studies demonstrate that it is associated decrements in intelligence which account for scholastic underachievement and not the conduct problems that is often seen in children with ADHD(41). Due to the deficit in the academic skills, a huge percentage of children with ADHD require academic tutoring, repeat a grade in school, are placed in special education programs, are suspended from school, or drop out school (42).

Specific Learning Disabilities:

Children with ADHD are more likely than normal children to have Specific Learning Disabilities. Due to inconsistencies in the criteria used to define Learning Disability, the prevalence of Learning Disability in different studies is highly variable. Using a liberal definition of Learning Disability, 38% of Children with ADHD were found to have it as compared to 8% in normal children(43).

Speech and Language Development:

Children with ADHD do not present with serious or generalized language delays. Various contradicting studies cannot confirm whether there is a delay or not. They present with a specific problem in speech development, for example, expressive language problems are more common than receptive language. On the other hand, a huge percentage of children with speech and language disorder can be diagnosed with ADHD. Children with ADHD are more talkative than normal children when conversing spontaneously(44). But they are poor in organizing and generating speech in response to specific task demands. In such situation, they talk less and are more nonfluent(45). Confrontational speech or explanatory speech is more difficult as it involves careful thought and organization. Children with ADHD have problems in the cognitive processes involved in organizing and monitoring thinking and thus lead to aforesaid speech problems.

Evidence of thought disorder is present in both the children with ADHD and those with schizophrenia, but ADHD group have less severe thought disorder than the group with schizophrenia. Children with Schizophrenia show greater illogical

thinking, less cohesion, and greater loose associations as compared to children with ADHD.

Accidental Injuries:

Children with ADHD are found to be more prone to accidents than are typical children(46). But it was observed that these children do not lack knowledge of safety or accident prevention(47). In spite of no deficiencies in knowledge of driving, safety, and accident prevention, young adults with ADHD have significantly more motor vehicle accidents(48).

Delay in internalization of Speech:

Children with ADHD are to be less mature in their self-speech and developmentally delay in the progression from public to private self-speech(49). All children show a similar sequence of development of private speech, but Children with ADHD show a considerable delay in this process relative to other children.

Greater Variability of Task Performance:

Children with ADHD show the excessive variability of task or work performance over time. Their standard deviation of performance on multiple trial tasks is considerably larger than that of normal children(50). The number of tasks they complete and the accuracy of their performance changes significantly from trial to trial in the same setting. Teachers often report much greater variability in homework and in-class performance, than seen in other children. Parents report these children perform certain chores swiftly and accurately at one time while

slowly on other time. No gender difference was noted for the above phenomenon for the various tasks in performance tests(50).

Memory and Planning Difficulties:

Nonverbal Working Memory

The nonverbal working memory includes visual-spatial working memory, sequential working memory and the sense of time.

Children with ADHD generally do not show a deficit in the recall, long-term storage, and long-term retrieval(40). But in the standard test evaluating working memory, these children document significant deficits.

Studies on visual-spatial working memory in children with ADHD are limited and present with conflicting results.

Studies of hand movement sequences document a deficit, while those involving trail-making sequences revealed no deficit.

Multiple studies show that sense of time is impaired in children with ADHD. The sense of time in ADHD children does not seem to improve with a stimulant(51).

Verbal Working Memory

Children with ADHD face difficulty in mental computation and are less efficient than normal children (52). Meta-analysis of nine studies using a mental arithmetic test reported similar statistically significant finding. Thus it is evident that verbal working memory as assessed by mental computation is impaired in children with ADHD.

Children and adolescents diagnosed with ADHD have shown difficulties with digit span. The Freedom from Distractibility factor of The Wechsler Intelligence Scale for Children-Revised comprises tests of digit span, mental arithmetic, and coding. It reflects the executive processes, on which the children with ADHD perform more poorly than normal children(53). Multiple studies, although, support that ADHD is associated with deficits in verbal working memory, learning disabilities can be often a confounding factor for this deficit.

The storage and recall of simple information on verbal memory tests have been found to be intact in children with ADHD (40). The deficit is evident when large and complex amounts of verbal information had to be retained over a lengthy period. These children require more proficient strategies that assist with organizing material to respond and remember effectively. It has also been demonstrated in adults with ADHD.

Hindsight, Forethought, and Planning:

Children with ADHD find difficult to adjust their subsequent responses based on an immediately past incorrect response(54). These children often fail to use the warning stimulus to prepare for the upcoming response trial and take longer preparatory intervals. Their capacity to create and maintain an anticipatory preparation for an impending event has also been shown to be impaired.

Along with these children and adolescents face problems in arousal and may have minor sleep difficulties. Studies support minor physical anomalies in this population.

ADHD is associated with emotion regulation. They display a higher level of anger and frustration.

Though primary sensory difficulties are not evident, motor development difficulties are common.

And the last, it is observed that children and adolescents with ADHD show greater medical care utilization and medical costs.

Multiple neuropsychological examinations which assess the construct of planning like the Tower of Hanoi (TOH), found children with ADHD to perform more poorly as compared to normal nondisabled children.

Children with ADHD shown deficit in performance tests like maze test and six elements test which assess planning.

II. a. 4. ***Prevalence of ADHD***

The worldwide prevalence estimates of ADHD are highly heterogeneous due to poorly understood reasons. It could be due to non-uniform diagnostic criteria, a different source of information, the requirement of impairment for diagnosis, and various geographic origin of the studies.

The ADHD worldwide pooled prevalence was 5.29% in one of systemic review and meta-regression analysis(55), an another comprehensive meta-analysis estimated the prevalence of attention deficit hyperactivity disorder (ADHD) 5.9–7.1 % based on DSM-IV criteria (56), while another systematic review and meta-analysis showed an overall pooled prevalence estimate of 7.2% in children and adolescents(57).

In India, a systemic review and meta-analysis estimate the prevalence of ADHD to be 6.46%(58).

Most of the children diagnosed with ADHD continue to meet criteria for ADHD as adults(59).

There is clear gender difference with respect to the prevalence of ADHD and its presentation. The male-to-female ratio between clinic-referred and community samples of children with ADHD can be 10:1 and 3:1 respectively. Few studies observe that this huge difference can be explained by the referral bias as boys are referred due to more disruptive behavior than girls.

In one study the ADHD prevalence ratio for males versus females was estimated to be 2.28:1, lower than the usually accepted estimate of 4:1 on an average. Since the study was based on a population-based sample, results were not subject to clinical referral bias that can lead to under-representation of females. It was also observed in the same study that though the overall prevalence of ADHD decreases with age, the ratio between males and females remains relatively stable(60).

It was observed that the gender prevalence gap was more in referred or clinical sample than non-referred. A study with small sample size on a non-referred group of ADHD subjects showed that gender did not influence ADHD-associated morbidity and dysfunction and that both genders were associated with high levels of psychiatric comorbidity and psycho-educational dysfunction(61).

Various studies have concluded that the ADHD subtypes provide current levels of inattention and hyperactivity-impulsivity symptoms, but are not sufficient to justify the classification of distinct forms of the disorder in long-term(62).

II.a.5. *Diagnostic Criteria*

Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5)(12)

The American Psychiatric Association has defined criteria for the diagnosis of ADHD, published in the Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5) [1].

The salient feature of the criteria includes:

1. For a diagnosis in children <17 years, a minimum of ≥6 symptoms of hyperactivity and impulsivity or ≥6 symptoms of inattention are required.
2. For a diagnosis in adolescent ≥17 years and adults, a minimum of ≥5 symptoms of hyperactivity and impulsivity or ≥5 symptoms of inattention are required.
3. Symptoms must be often present
4. Symptoms must be present in more than one setting.
5. Should persist for a minimum period of six months
6. Should be present before the age of 12 years
7. Impair function in academic, social, or occupational activities
8. Be excessive for the developmental level of the child
9. Other physical, situational, or mental health conditions that could present with similar for symptoms should be excluded

These diagnostic criteria have high inter-rater reliability. These criteria do not over-diagnosis or misdiagnosis of ADHD(63).

Depending upon the predominant symptoms, ADHD can be categorized into one of the three subtypes which are predominantly inattentive, predominantly hyperactive-impulsive, and combined type.

These subtyping of a given patient can change from one to another over time(64).

Limitations include the derivation of criteria from studies of children evaluated in the psychiatric special clinic rather than primary care setting. Moreover, the requirements of symptoms presenting before the age of 12 years are controversial.

International Classification of Mental and Behavioural Disorders 10th revision (ICD-10)(65).

This medical classification system was published by the World Health Organization (WHO) in 1992.

ICD-10 refers to attention-deficit hyperactivity disorder (ADHD) as hyperkinetic disorder (HKD).

This classification system defines Hyperkinetic Disorder as a persistent and severe impairment of psychological development, characterized by early onset of overactive, marked inattention and lack of persistent task involvement which are pervasive over situations and persistent over time.

Salient features of the ICD-10 medical classification system for ADHD:

i. The main symptoms of HKD are impaired attention and over-activity.
ii. Both are necessary for diagnosis

iii. Behavioural symptoms should present prior to 6 years of age and continue for long duration

iv. Impairment must be present in two or more settings (e.g. home, classroom, clinic)

v. Diagnosis of anxiety disorders, mood affective disorders, pervasive developmental disorders and schizophrenia must be excluded.

vi. The diagnosis should only be considered if symptoms are excessive for the child's age and Intelligence quotient, and are abnormal in the context of what is expected in the specified situation

ICD-10 also lists symptoms characteristic of children with HKD, which are not required for making a diagnosis.These include disinhibited in social relationships, recklessness in dangerous situations and non-adherence to social norms

II.a.6. *Comorbid Disorders*

Clinical observation and multiple studies noted that Attention Deficit Hyperactivity Disorder (ADHD) has been comorbid with a variety of psychiatric disorders. These include behavioral disorder like oppositional defiant and conduct disorders, as well as the affective disorders, anxiety disorders, and learning disorders(43,66).

The reason of such high overlap continues to be a query. Not only there is a combination of symptoms in the event of comorbidity, the overall course and prognosis at times are affected. For example, ADHD and ADHD with conduct disorder appear to be distinct subtypes. Children with ADHD and conduct disorder children have higher rates of antisocial personality as adults, though the short-term

response to stimulants is the same as in children with ADHD only. Similarly, the stimulant response is poorer in ADHD children with comorbid anxiety, though impulsivity is attenuated in ADHD in such children. Regardless of prevalence, children with ADHD and aforesaid comorbidities have high rates of aggression and psychiatric disorder in their families.

II. a. 7. *Treatment Options.*

Treatment options include the pharmacological interventions, the non-pharmacological intervention, or a combination of aforesaid options.

Initially, the studies focused on the short-term trial of medication and psychological interventions for the treatment of ADHD.

Introduction of stimulants for ADHD was observed to be very promising. Analog classroom setting examined hour to hour effects of medication on behavior and cognition which helped in the further development of other stimulants.

This was followed by multiple large studies which were conducted to study the properties of these stimulants along with efficacy of atomoxetine and methylphenidate transdermal patch(67,68).

The beneficial effect of psychosocial interventions in the management of ADHD had also been proved in various effect.

The Multimodal Treatment Study of ADHD (MTA) was started to look at the effects of medication management, behavior modification therapy and their combination, and usual community comparison in the treatment ADHD over a long period. The 14-month assessment showed the superiority of the medical

management or combination therapy over behavior modification therapy and community comparison.It also reported modest benefits of combination therapy over medical management alone. Re-evaluation after further 10 months showed persisting same finding but the gap was reduced(69).

II.b.Epilepsy in Children

Epilepsy is a disorder of the brain characterized by an enduring predisposition to generate epileptic seizures. The International League Against Epilepsy (ILAE) task force defined Epilepsy if at least two unprovoked (or reflex) seizures occurring >24 h apart, or one unprovoked (or reflex) seizure and a probability of further seizures similar to the general recurrence risk (at least 60%) after two unprovoked seizures, occurring over the next 10 years, or in case of diagnosis of an Epilepsy syndrome(70).

World Health Organization estimates that approximately 50 million people currently live with Epilepsy worldwide. Between 4 and 10 per 1000 people of the general population are estimated to have active Epilepsy at a given time.

The incidence of Epilepsy in children ranges from 41-187/100,000, but the prevalence of Epilepsy in children is consistently higher. It ranges from 3.2-5.5/1,000 in developed countries as compared to 3.6-44/1,000 in underdeveloped countries(71).

It was noted that prevalence was higher in rural areas as compared to urban areas. Moreover, the incidence of Epilepsy is consistently reported to be highest in the first year of life and it declines to adult levels by the end of the first decade of life.

Emotional, behavioral, and relationship difficulties are more prevalent in children with Epilepsy. They constitute a significant burden to the children and their families(72).

The children with Epilepsy make less academic progress than expected for their age and Intelligence level. The academic performance of these children depends on the age of the child, age of seizure onset, lifetime total seizure frequency, and presence of multiple seizures(73).

II.c. Attention Deficit Hyperactivity Disorder in Children with Epilepsy

II.c.1. Introduction

The association between ADHD and Epilepsy has been the topic of several studies. ADHD and Epilepsy may be comorbid conditions. That is, the two disorders may occur together owing to a causal relationship between them or owing to an underlying vulnerability to both disorders. Both the disorder effect each other in terms of distribution in gender and age of onset, in terms of medicine used for treating them and current control of symptoms. There are multiple other variables affecting the association between these two illness. They need to be studied. It has been shown that attention deficit hyperactivity disorder and Epilepsy can individually effect the learning, social and behavioral development of children. As such these been comorbid in high percentage is expected to have a greater implication on children development in all aspects. Such children are at known risk for academic underachievement which can be due to inattention and hyperactivity,

and appropriate treatment of these problems might improve the scholastic performance.

II.c.2. Clinical Presentation

The clinical presentation in ADHD children with Epilepsy is variable in view of the complexity of this combination. Both ADHD and Epilepsy can independently affect the neuropsychological process. Studies have shown that children with complex partial seizure were not different from a patient with ADHD alone on their performance of a continuous performance task. It had also been observed in various studies that children with ADHD and Epilepsy did not respond to stimulants as effectively as compared to children with ADHD alone.

Dunn et al in a study found that majority of children with ADHD only presented with combined type, while with Epilepsy and ADHD mostly met the criteria of predominantly inattentive type, followed by combined type, followed by predominantly hyperactive-impulsive type(74). He also observed that sex of the child, seizure type and focus of seizure disorder were not found to predict the symptoms of ADHD. Hesdorffer et al in their studies reported the similar finding as above(75). Another study evaluated the children with ADHD and Epilepsy after 1 year of anti-epileptic drugs. It was found that attention problem in children rose from 21% to 42% in that period, showing that factors related to Epilepsy or treatment had a negative effect on performance(76).

II.c.3. Prevalence

Through various studies and clinical experiences, it is clear that Attention Deficit Hyperactivity Disorder is found in a higher percentage of the pediatric population with Epilepsy.

Children with ADHD had almost twice the risk of Epilepsy than children as compared to children without ADHD(77). Similar studies done in various part of the world supports a strong interrelationship between ADHD and Epilepsy.

Attention Deficit Hyperactivity Disorder in children and adolescents with Epilepsy might be as high as 38%(74). Barkley has estimated the prevalence in a pediatric population with Epilepsy to be 20% to 30%(78).

Mc Dermott et al. reported hyperactivity in 28% of children with Epilepsy as compared to 13% of those with heart disease and 5% of controls(79). The analysis indicated that children with a seizure disorder were 4.7 times more likely to have a behavior problem, while children with cardiac problems were 3 times more likely to have behavior problems when compared with controls. The behavior problems associated with children with seizures were hyperactive and dependent(79).

Other study showed that children with unprovoked seizure were 2.5 fold more likely to have ADHD(75). It was also noted that age of onset of attention deficit hyperactivity disorder was earlier in pediatric age group with Epilepsy as compared to without Epilepsy(75).

Persistence estimates of attention deficit hyperactivity disorder show that it reduces with the age (80).

Dunn et al also showed that children with Epilepsy differ from other samples of children with ADHD, by an equal male-female ratio(74). This is contrary to as seen in general population where the prevalence of ADHD for males is more than female(81).

II.c.4.Effect of medication for ADHD on Epilepsy

Medication prescribed for the treatment of attention deficit hyperactivity disorder may itself affect the threshold of Epilepsy and thus the frequency and severity of seizures. Methylphenidate is commonly believed to lower seizure threshold. But in a study, Methylphenidate had been shown to have a beneficial effect on EEG and the seizure frequency was not changed from baseline. With mild and transient side effect with Methylphenidate was found to be is safe and effective in children with ADHD and concomitant active seizures or EEG abnormalities(82).

II.c.5. Effect of Anti-Epileptic Drugs on ADHD symptoms

Cognitive decline along with behavior problem is well documented with ADHD. There are numerous anecdotal reports showing an association of anti-epileptics with cognitive decline or behavioral dysfunction, although it has been not been clearly demonstrated with controlled studies (83). The main reason for this being the small sample size, with wide variations in types and dosages of antiepileptic drugs used, types of seizure disorders treated, and treatment duration and outcome. Many such studies have conflicting results.

Few studies demonstrate improvements in cognition or behavior while on antiepileptic therapy, possibly as a result of improved seizure control.

It is also difficult to determine whether the behavioral changes are due to the antiepileptic drugs used or due to seizure control.

Epileptic patients with coexisting learning disabilities and behavior problems may show a sudden increase in alertness and abilities due to improved seizure control. Initially, without the social skills or experience to use these new-found abilities in a beneficial way, these patients may suddenly appear hyperactive.

Children and adolescent with Epilepsy on multiple older antiepileptic drugs such as Phenobarbital, Phenytoin, and Primidone may benefit from a reduction in the number of antiepileptic drugs.(84).

Poly-therapy anti-epileptic regiments have been found to have a significant relationship with behavior problems in few studies while other studies do not support it.

Studies of specific antiepileptic drugs are complex. Patients with different types of epilepsies and patients on multiple antiepileptic drugs are often lumped together in studies, making it difficult to determine which drug is causing the symptom. It is also difficult to determine whether the cognitive impairment is a result of the antiepileptic or the underlying neuropsychological disturbance. Moreover, different studies compare drugs at different dosage levels which add to the complexity. A small sample size and short follow-up weaken the finding of the study. The optimal study may be a comparison of seizure-free patients before and after stopping a single antiepileptic (85).

Phenobarbital has frequently been reported to cause hyperactivity and impairment of attention, even in mono-therapy and even in low doses, and behavioral side effects are worse with high blood levels(86–92).

Phenytoin has been reported to cause impairments of various aspects of cognitive function, such as memory, motor, and mental speed, but not hyperactivity or inattention(93–95).

Carbamazepine is not thought to cause hyperactivity or inattention and may improve alertness and attentiveness in some patients(96–98).

Whether valproate impairs attention or causes hyperactivity remains a question as multiple studies are contradictory(99–104).

Despite gabapentin's beneficial effect as a mood stabilizer, there are numerous case reports and small studies indicating that gabapentin causes increased hyperactivity, irritability, and aggressive outbursts, particularly in children with preexisting behavioral disturbances and developmental disabilities(105–108).

Lamotrigine, on the other hand, has been demonstrated to cause improvement in behavior and attention in numerous small studies, some of which included children(108–114).

There are several reports which suggest that Topiramate has adverse effects on attention and cognition, although overall the effects are extremely small(115–118).

Tiagabine and Oxcarbazepine have not been demonstrated to have any effects on behavior or attention(119,120).

Studies for Zonisamide and Levetiracetam are non-conclusive(121–125). Risk factors for adverse behavioral effects included fast titration rate, history of psychiatric disorder, and presence of symptomatic generalized Epilepsy.

Attention deficit hyperactivity disorder and Epilepsy can individually affect the learning, social and behavioral development of children. As such these been comorbid in high percentage is expected to have a greater implication on children development in all aspects. Such children are at known risk for academic underachievement which can be due to inattention and hyperactivity, and appropriate treatment of these problems might improve the scholastic performance.

II. d. Indian studies

ADHD in children with Epilepsy is a source of much distress for children and caregiver. Though worldwide multiple studies had been conducted to study variously related variable, there are a limited number of studies done in Indian population or if done, had the limitation of a small sample.

A study conducted in the pediatric outpatient department observed that the prevalence of ADHD was 5.2% in those aged 3-4 years and 29.2% in those aged 11-12 years. Boys were four times more affected than girls with ADHD. ADHD was most common in first-born children and those from a lower socioeconomic class. Children with ADHD had a higher rate of pregnancy and delivery-related complications, relative to a comparison group. It was also noted that ADHD was more associated with delayed development, temper-tantrums, enuresis, tics, broken

homes, parental marital discord and psychiatric illness than in the comparison group (126).

Another study of referred children showed that nearly 20.3% children met the diagnosis of ADHD with a male-female ratio of 6.3:1 and the mean age was 5.7 years. Most of the children diagnosed with ADHD belonged to middle and lower socio-economic class and were first-born children. Delayed development, comorbidity psychiatric illness, and learning disability were more common in children with ADHD than normal children.Most children were brought up in nuclear families and combined subtype of ADHD was the most common. (127)

A study of ADHD children presenting to a child guidance clinic in a pediatric hospital setup over a one year period reported the prevalence of ADHD to be 15.5%, with the inattention subtype being predominant with a male to female ratio of 6.4:1. It was observed that 27.0% of children had developmental issues. Oppositional defiant disorder was most prevalent comorbid psychiatric disorder while depression was least. Major religion was Hinduism and most of the families were of middle socioeconomic status. They also observed that most of the patients were referred by a pediatrician(128).

A study conducted in Pediatric neurology out-patient department documented 23.4% of children with idiopathic Epilepsy to have symptoms of ADHD with a mean age of 9.36 years. The inattentive subtype of ADHD was the most common type. ADHD was more common among the upper and upper-middle socioeconomic status families mostly from a rural background. No consanguinity in parents or

relevant family history was present. Generalized seizure with childhood onset, were most common among the study sample. Around 30 % of children with Epilepsy and ADHD were already on stimulants. Stimulants were not found to be worsening of seizures(129).

III: AIMS & OBJECTIVES

III.a. Aim

To study the prevalence of Attention Deficit Hyperactivity Disorder (ADHD) in children and adolescents with Epilepsy and the associated factors

III.b. Objectives

1. To study the prevalence and clinical profile of ADHD in children and adolescents with Epilepsy.
2. To study the socio-demographic and illnesses (Epilepsy and ADHD) -related factors associated with ADHD in the study population.

III.c. Hypotheses

1. The prevalence of ADHD in children and adolescents with Epilepsy is different when compared with a child and adolescents without Epilepsy.
2. Specific predictive factors are associated with ADHD in children and adolescents with Epilepsy are when compared with a child and adolescents without Epilepsy.

III.d. Null hypotheses

1. The prevalence of ADHD in children and adolescents with Epilepsy is not different when compared with children and adolescents without Epilepsy.
2. Specific predictive factors are associated with ADHD in children and adolescents with Epilepsy are not different when compared with children and adolescents without Epilepsy.

IV: METHODOLOGY

IV. a. Setting

The study was conducted by the Child and Adolescent Psychiatry Unit of the Department of Psychiatry in collaboration with Pediatric Neurology Unit of the Department of Neurosciences. The Child and Adolescent Psychiatry Unit is one of the four units in the Department of Psychiatry and has both inpatient and outpatient services. The Unit has sections for children with various developmental disabilities of Intellectual Disability, Autism, Specific Learning Disorders, and ADHD. The Emotional and behavioral disorders section has services focused on psychoses, mood and other psychiatric disorders among the child and adolescent population. The protocol was developed by the Unit for approval by the Institutional Review Board.

The participants were recruited from Paediatric Neurology Clinic, Department of Neurosciences, Christian Medical College, Vellore. This is a specialized unit offering outpatient, inpatient, emergency and consultation-liaison services to patients of the paediatric age group for neurological problems. The diagnosis of Epilepsy was made by Paediatric Neurologists based on clinical history and EEG findings according to the International League against Epilepsy criteria. The participants were recruited for a period of 1-year period, from October 2016 to September 2017 if they satisfied the selection criteria.

IV.b. Participants

IV.b.1. Selection criteria

Inclusion criteria:

1. Children and adolescents between 4 years to 15 years of age diagnosed to have a seizure disorder by the neurologist as per criteria of International League against Epilepsy.
2. Parents should be conversant in English, Tamil, Bengali or Hindi.
3. Written informed consent obtained from all parents and verbal assent from the child or adolescent when feasible.

Exclusion Criteria

1. Presence of severe special sensory impairment.
2. MRI or CT evidence of brain abnormality.
3. Non-ambulatory, below the moderate level of intellectual functioning as the diagnostic accuracy of ADHD decreases.

IV.b.2. Sample size

Based on worldwide studies, the prevalence of attention deficit hyperactivity disorder in children and adolescents with Epilepsy is around 20% to 38% prevalence (74,78,79), and the sample size was calculated as 161 as given in Table 1.

Table 1: Sample-size calculation details

Single Proportion - Absolute Precision				
Expected Proportion	0.38	0.38	0.28	0.38
Precision (%)	5	10	10	7.5
Desired confidence level (1- alpha) %	95	95	95	95
Required sample size	362	91	77	161

IV.b.3. Sample selection

All children and adolescents who had enrolled themselves in the Pediatric Neurology Clinic for suspected neurological disorders and available were screened and confirmed for Epilepsy. These children and adolescents were assessed for ADHD and for other details required for this study if they satisfied the selection criteria. Thus a purposive, non-random sampling was used to recruit participants till the sample size was achieved.

IV.b.4. Variables measured in the study

Dependent variable Measure

Attention deficit hyperactivity disorder as diagnosed by the ICD-10 criteria. The depended variable was dichotomised as ‘case’ and ‘no-case’ for the statistical analyses.

Independent variables

Socio-demographic and family variables: Age, gender, socio-economic status, type of family, total family member, number of siblings, and birth order.

Pregnancy-related variables: Term, duration of labor, type of delivery, and fetal presentation.

Perinatal variables: Low birth weight, birth asphyxia, hypoxic-ischemic encephalopathy, sepsis, and neonatal jaundice.

Cognitive and educational variables: Developmental milestones, current academic standards, academic performance, and intelligence quotient.

Epilepsy-related variables: The age of onset, the age at diagnosis, duration of disease, seizure semiology, seizure syndrome, EEG findings, MRI-CT imaging findings, seizure frequency and duration of last seizure.

Epilepsy treatment-related variables: Anti-epileptic drugs (AED) prescribed, number of AED prescribed, current seizure control, and serum levels of AED.

Psychiatric and medical comorbidity variables: Comorbid psychiatric disorder, treating psychiatric disorder, vitamin D level, medical comorbidity, treating medical comorbidity.

Family history of ADHD, Epilepsy and comorbidity variables: Family history of ADHD, degree of family member with ADHD, family history of epilepsy, degree of family member with epilepsy, family history of mental illness,degree of family member with mental illness,family history of mental retardation, and degree of family member with mental retardation.

Potential Confounders

The factor of treatment for ADHD was taken as a potential confounder for the prevalence and risk factor study.

IV.c. Measure and assessment

Clinical Research Form: Data collection form designed for the study (enclosed). This was used to collect information regarding socio-demographic details of the children and adolescents, the clinical profile including Epilepsy profile and anti-epileptics used in last 6 months.

Clinical diagnoses:

ICD-10 research criteria - Psychiatric diagnoses of ADHD made by psychiatrists based on the tenth edition of the World Health Organization's International Classification of Diseases (ICD –10) research criteria for Attention deficit hyperactivity disorder.

Criteria Includes:

The research diagnosis of hyperkinetic disorder requires the presence of abnormal levels of inattention and restlessness which are pervasive in various situations and are persistent over time.They can be demonstrated by direct observation.They should not be caused by other disorders such as autism or affective disorders. Onset should be before the age of seven years and duration of the disturbance should be at least 6 months. Intelligence quotient should be above 50.

Epilepsy diagnosis: Epilepsy diagnosis was made by paediatric neurologist based

on clinical history and EEG finding according to International League against Epilepsy criteria.

Assessment Scale for Attention Deficit Hyperactivity Disorder:

Vanderbilt ADHD Diagnostic Parent Rating Scale- The VADPRS is the parents' version of the teacher rating scale, the VADTRS (Wolraich et al., 1998, Wolraich et al., 1998). It includes all 18 of the DSM-IV criteria for ADHD. In addition, 8 criteria for oppositional defiant disorder (ODD) and 12 criteria for conduct disorder (CD) are included, along with 7 criteria from the Paediatric Behaviour Scale that screen for anxiety and depression. The wording has been simplified so that the reading level is slightly below third grade. Parents are asked to rate the severity of each behavior on a 4-point scale ("never" to "very often"). The diagnosis is considered present if scores of 2 or 3 on a 0–3 scale (indicating that a behavior is "often" or "very often" present) are checked for the requisite number of criteria based on the Attention Deficit Hyperactivity Disorder diagnosis.

The performance section of the VADPRS is an eight-item scale with four items relating to academic performance: (a) overall academic performance, (b) reading, (c) mathematics, and (d) written expression. Another four items evaluate relationships: (e) peers, (f) siblings, (g) parents, and (h) participation in organized activities. The parent rates each of these on a 5-point scale from "problematic" to "above average."

Items (43 for the VADTRS and 45 for the VADPRS) are rated on 4- and 5-point scales.Higher scores indicate more severe symptoms, except for the performance

section, in which higher scores indicate greater performance in academics and classroom behavior. This scale will be administered to the study population and both severity and performance domains will be assessed.

Assessment of functioning in a child:

Bharat Raj Developmental Screening

Bharat Raj Development Screening test was developed at all India Institute of Speech Pathology and Hearing, Mysore, India(130). This test has a simplified version with the age range of 3 months to 15 years. It is found to be quite useful for screening functionality and has high validity and reliability.

Social Economic Status

Modified Kuppuswamy Scale (revised with income ranges for 2014)

Modified Kuppuswamy Scale determines the socio-economic status of a family taking into account education and occupation of the head of the family along with the total per capita income per month. The scale used in the study was a modified version of the original 1976 scale-revised for the income ranges in 2014. The scale has been modified multiple times before, the last time being in 2012. Based upon the total score of the three domains, 5 levels of socio-economic status can be obtained which are upper, upper middle, lower middle, upper lower and lower.

Assessment of Epilepsy and ADHD

The Epilepsy-related assessments were done by the Paediatric Neurology team and the details related to the ADHD and other risk factors were collected by another researcher to maintain the independency of the rating for ADHD related variables.

IV.d. Data and Statistical analysis

The data analysis was done to check for missing data, outlier analysis, need for transformations and re-categorization of the data to capture the collected details in the best possible way to check the hypotheses. The missing data were handled using the regression method. The outliers were explored using the Grubbs test (double sided with α=0.05) were removed from the analysis. There was no need for transformations but the some of the continuous data required re-categorization.

The participant characteristics were analyzed using descriptive statistics and expressed as a percentage or mean [standard deviation (SD)].

For the hypothesis 1, the prevalence of ADHD among children and adolescents were calculated using descriptive statistics and expressed in percentages. The prevalence in various subgroups was also expressed in percentages.

For the hypothesis 2, the predictive factors for ADHD among children and adolescents were calculated using univariate and multivariate regression analysis. As the dependent variable was the dichotomised ADHD 'case' vs. ADHD 'no-case', we conducted a series of logistic regression analyses. In the univariate regression analyses, one independent variable with constant variable was included in the equation for each analysis. In the multivariate analyses, with dichotomised ADHD diagnosis as the dependent variable, one independent variable with the constant variable and the confounders of treatment for ADHD was in the equation for each analysis.

A P value of <0.05 was considered as statistically significant and all tests were 2-tailed. The analyses were done with statistical software packages of SPSS (version 15) and MedCalc (version 15.8).

IV.e. Ethical considerations

1. Permissions were obtained from the Child and Adolescent Psychiatry Unit and Paediatric Neurology Unit before conducting the study.
2. Methodological and ethical approval from the local Institutional Review Board was obtained before conducting the study.
3. Verbal assent was obtained from the child or adolescents and written when possible and informed consent was acquired from the primary caregiver always.
4. Reversible anonymisation and limited availability of the collected data were maintained to improve the participant confidentiality.

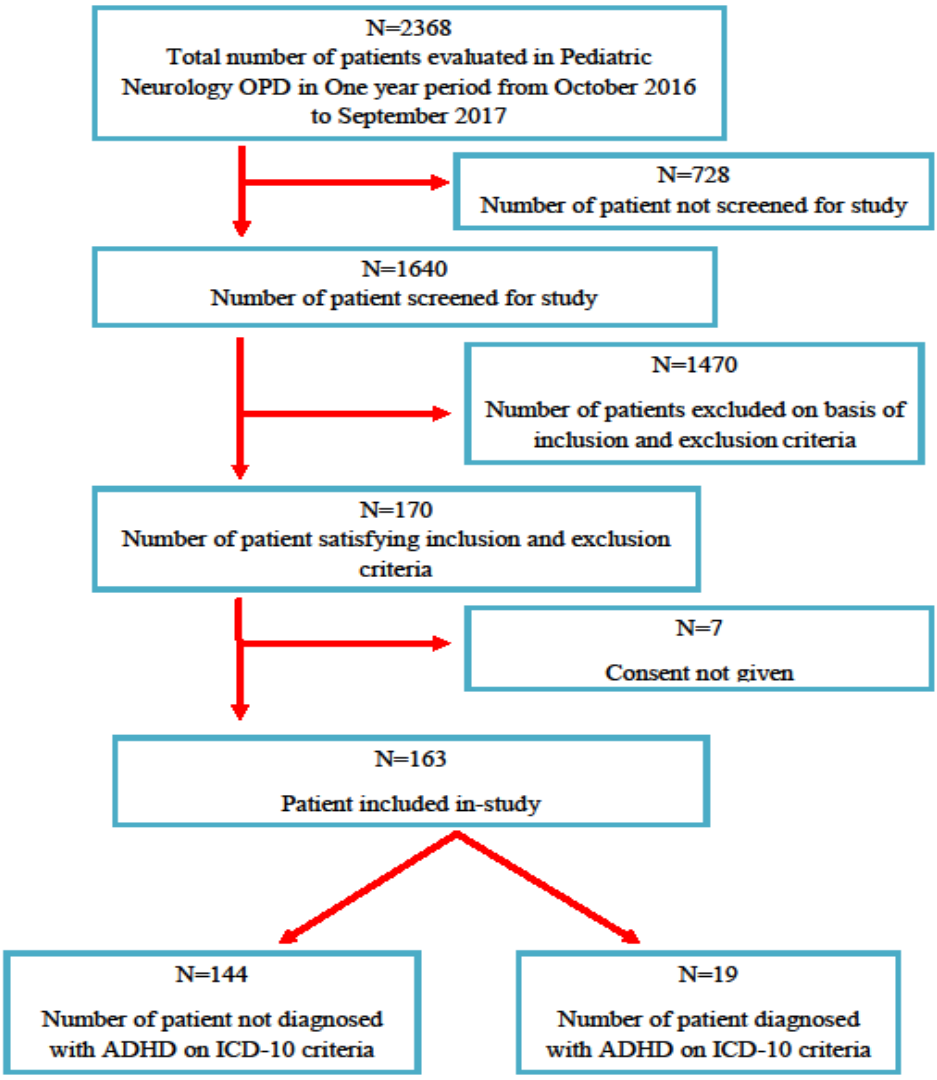
V: RESULTS

V.a. Participant flow

A total of 163 children and adolescents with Epilepsy were recruited into the study.

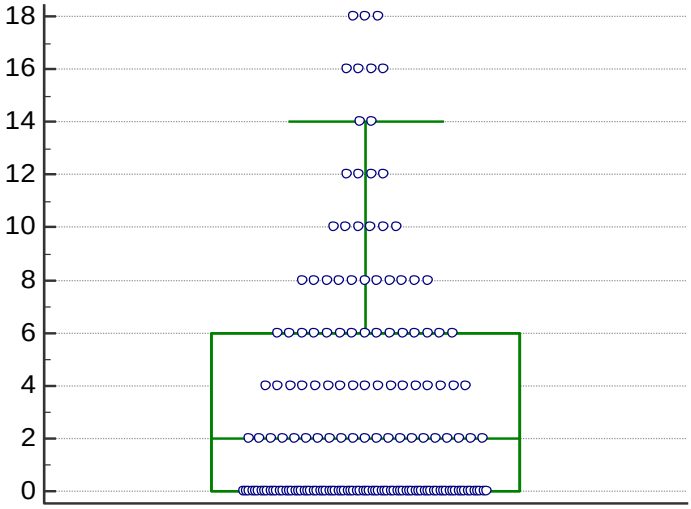
The flow of participants is described in figure 1, based on the selection criteria.

Figure 1: The flow chart for the participants

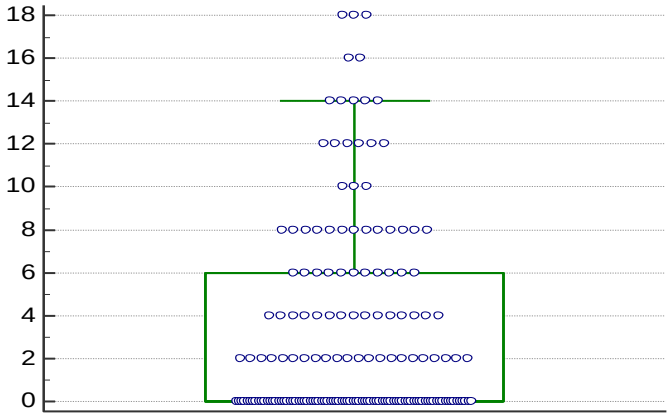


The outlier analysis using the subscale scores of inattention and hyperactivity did not show participants with far outside values (Figure 2). There was no missing data for the final analysis.

Figure: 2. The Box and Whisker plot for the outliers in the subscale of inattention and hyperactivity.



Grubbs - double-sided (alpha-level 0.05)	
Outside values	**16 16 16 16 18 18 18**
Far-out values	**None**



Grubbs - double-sided (alpha-level 0.05)	
Outside values	**16 16 18 18 18**
Far-out values	**None**

V.b. Participant Characteristic

The majority of the participants were children and adolescents were in the range of 4 to 15 years. Majority of them were boys, from Hindu faith, from West Bengal and Tamil Nadu speaking Bangla and Tamil respectively.The participant was primarily from upper middle and middle-middle socio-economic status. They were from either nuclear or joint family. The participants characteristic is further described in table 2.

Table 2: The participant's characteristics.

Demographic variables	***N (%) N=163***
Chronological age: mean(sd) in years	
Male	9.93(3.28)
Female	8.96(3.01)
Gender	
Male	107(65.6%)
Female	56(34.4%)
Religion	
Hindu	126(77.3%)
Muslim	15(9.2%)
Christians	22(13.5%)
Mother Tongue	
Bangla	63(38.7%)
Tamil	56(34.4%)
Hindi	24(14.7%)
English	1(0.6%)
Telugu	10(6.1%)
Malayalam	7(4.3%)
Others	2(1.2%)
State	
West Bengal	59(36.2%)
Tamil Nadu	59(36.2%
Kerala	7(4.3%)
Andhra Pradesh	10(6.1%)
Others	28(17.2%)

Table 2: The participant's characteristics.(Continued……)

Demographic variables	***N (%) N=163***
Socio-economic status	
Upper	12(7.4%)
Upper middle	70(42.9%)
Middle/Lower middle	62(38.0)
Lower/Upper lower	19(11.7)
Family Structure	
Nuclear	85(52.1%)
Extended	21(12.9%)
Joint	57(35.0%)
Parents Marital Status	
Living Together	163(100%)
Separated	0(0%)
Divorced	0(0%)
Intelligence Quotient	
Average	135(82.8%)
Borderline	14(8.6%)
Mild	11(6.7%)
Moderate	3(1.8%)
Academic Performance	
Excellent	29(17.8%)
Above average	36(22.1%)
Average	63(38.7%)
Somewhat of a problematic	30(18.4%)
Problematic	5(3.1%)
Medical Co-morbidity	
Present	7(4.3%)
Absent	156(95.7%)
Vitamin D Deficiency	
Present	61(37.4%)
Absent	17(10.4%)
Vitamin D level not done	85(52.1%)

V.2. Prevalence

The prevalence of ADHD as per ICD-10 criteria was 11.75% (19/163). The prevalence of ADHD was noted in 10% (11/107) of boys and 14% (8/56) of girls among the participants. Similarly, ADHD was noted in 15% (15/99) of children under 10 years of age and 6% (4/64) of adolescents above 10 years of age.

V.3. Predictive factors

The predictive factors as analyzed by the univariate and multivariate logistic regression analyses are presented in this subsection.

Table 3: The summary of the Univariate Logistic Regression analysis of the demographic and family variables*

Variable	β(SE)	Wald, df	Unadjusted OR	P value
Age (years)	-0.115(0.079)	2.120,1	0.892	0.145
Gender Girls Boys	 Reference -0.375(0.497)	 0.568,1	 1.455	 0.451
SES Upper Middle & Lower	 Reference 0.354(0.309)	 1.313,1	 1.424	 0.252
Type of Family **Nuclear** **Extended/Joint**	 **Reference** **0.507(0.269)**	 **3.558,1**	 **1.661**	 **0.059**
Total Family Member	0.116(0.064)	3.352,1	1.123	0.067
Number of Siblings	**0.542(0.260)**	**4.331,1**	**1.719**	**0.037**
Birth Order First Second,Third,Forth	 Reference 0.378(0.249)	 2.313,1	 1.460	 0.128

*= constant included in all analyses.

It documents that the children and adolescents from extended or joint family, with Epilepsy, were at 1.6 times at risk for ADHD when compared with those from a nuclear family. Similarly, a total number of a sibling was also associated 1.7 times as a risk for developing ADHD when they have Epilepsy. The total number of family members showed a statistical trend toward being a risk factor for ADHD. The other demographic and family variable of age, gender, SES and birth order were not associated with ADHD in this population as noted in Table 3.

Table 4. The summary of the Univariate Logistic Regression analysis of the pregnancy-related variables*

Variable	**β(SE)**	**Wald, df**	**Unadjusted OR**	**P value**
Term				
Full term	Reference			
Preterm	19.213(4.019)	0.000,1	2.208	1.000
Post-term	.000(4.494)	0.000,1	1.000	1.000
Duration of Labor				
Normal	Reference			
Prolonged	0.325(0.252)	1.661,1	1.384	0.198
Type of Delivery				
Normal	Reference			
Instrumental	-0.265(0.490)	0.292,1	0.767	0.589
Operation	-19.340(2.842)	0.000,1	0.000	0.999
Abnormal Fetal Presentation				
No	Reference			
Yes	19.184(4.019)	0.000,1	2.146	1.000

*= constant included in all analyses.

As noted in Table 4, none of the factors namely the Term at birth, duration of labor, type of delivery, the fetal presentation were associated with ADHD in children with Epilepsy.

Table 5. The summary of the Univariate Logistic Regression analysis of the perinatal variables*

Variable	β(SE)	Wald, df	Unadjusted OR	P value
Low Birth Weight				
No	Reference			
Yes	0.492(1.071)	0.212,1	1.636	0.646
Birth Asphyxia				
No	Reference			
Yes	-0.693(0.831)	0.695,1	0.500	0.404
HIE				
No	Reference			
Yes	19.184(4.019)	0.000,1	2.146	1.000
Sepsis				
No	Reference			
Yes	-19.184(0.019)	0.000,1	0.000	1.000
Neonatal Jaundice				
No	Reference			
Yes	0.834(0.842)	0.981,1	2.303	0.322

*= constant included in all analyses.

As noted in Table 5, none of the factors namely the Low birth weight, birth asphyxia, presence of evidence of hypoxic-ischemic encephalopathy, neonatal sepsis, and neonatal jaundice were associated with ADHD in children with Epilepsy.

Table 6: The summary of the Univariate Logistic Regression analysis of cognitive and educational variables*

Variable	β(SE)	Wald, df	Unadjusted OR	P value
Developmental Milestones				
On time	Reference			
Delayed	-0.503(0.612)	0.675,1	0.605	0.411
Current Academic Standard	-0.120(0.075)	2.573,1	0.887	0.109
Academic Performance				
Excellent	Reference			
Above Average	-19.817(7.464)	0.000,1	0.000	0.998
Average	-2.169(1.509)	2.065,1	0.114	0.151
Somewhat Problematic	-0.693(1.188)	0.341,1	0.500	0.559
Problematic	0.693(1.183)	0.343,1	2.000	0.558
Intelligence Quotient				
Average	Reference			
Borderline	**1.506(0.670)**	**5.052,1**	**4.509**	**0.025**
Mild	1.442(0.747)	3.729,1	4.227	0.053
Moderate	1.729(1.265)	1.870,1	5.636	0.171

*= constant included in all analyses.

Among the cognitive and education related variable of the participants, only the intelligence quotient was associated with the ADHD.Having the borderline intelligence was associated 4.5 times and having a mild intellectual disability was associated with 4.2 times of having ADHD. The other factors of delayed developmental milestones, a current academic level achieved and academic performance abilities were not associated with ADHD as noted in Table 6.

Table 7: The summary of the Univariate Logistic Regression analysis of Epilepsy-related variables*

Variable	β(SE)	Wald, df	Unadjusted OR	P value
Age of Onset	-0.010(0.006)	2.193,1	0.990	0.139
Age of Diagnosis	-0.010(0.006)	2.580,1	0.990	0.108
Duration of Disease	0.001(0.006)	0.014,1	1.001	0.907
Seizure Semiology	0.241(0.487)	0.246,1	1.273	0.620
Seizure Syndrome	0.038(0.058)	0.424,1	1.039	0.515
EEG Normal Abnormal	 Reference -0.300(0.489)	 0.377,1	 0.741	 0.539
MRI/CT MRI-N CT-N MRI Subtle	 Reference -0.628(1.067) 0.912(1.183)	 0.347,1 0.595,1	 0.534 2.490	 0.556 0.441
Seizure Frequency 1 Seizure/several years 1-11 Seizures/year 1-3 Seizures/month **1-6 Seizures/week** **Daily Seizure**	 Reference 2.222(1.296) 1.934(1.263) **2.627(0.772)** **1.662(0.703)**	 2.940,1 2.344,1 **11.592,1** **5.589,1**	 9.222 6.917 **13.833** **5.270**	 0.086 0.126 **0.001** **0.018**
Duration since last Seizure	**-0.063(0.025)**	**6.246,1**	**0.939**	**0.012**

*= constant included in all analyses.

Among Epilepsy-related variables, the seizure frequency and duration since last seizure was significantly associated with ADHD. Having a seizure frequency of 1-6 seizure per week was 13.8 times at risk of being associated ADHD, while daily seizures were associated with 5.2 times higher risk of being associated with ADHD.

All the above mention risks were when compared with 1 seizure in several years.It showed that longer the duration since the last seizure more the protective factor associated with ADHD.The age of onset of Epilepsy, the age at diagnosis of Epilepsy, duration of disease, seizure semiology, seizure syndrome, EEG abnormality, and imaging abnormalities were not associated with ADHD in children with Epilepsy.

Table 8: The summary of the Univariate Logistic Regression analysis of Epilepsy treatment-related variables*

Variable	β(SE)	Wald, df	Unadjusted OR	P value
AED	19.192(2.842)	0.000,1	2.162	0.999
Number of AED No AED Single/Multiple AED	 Reference 0.488(0.299)	 2.665,1	 1.629	 0.103
Current Seizure Control Yes **No**	 Reference **1.951(0.553)**	 **12.456,1**	 **7.034**	 **0.000**
Compliance of AED Yes No	 Reference -19.184(4.019)	 0.000,1	 0.000	 1.000
Serum AED Level Adequate Inadequate/Not Done	 Reference 0.501(0.591)	 0.718,1	 1.650	 0.397

*= constant included in all analyses.

Among the factors related to the treatment of Epilepsy, only no current seizure control was statically significantly was associated with ADHD. Not having current seizure control when compared with achieving current seizure control was 7 times at risk of being related to ADHD. The factors of a dose of AED, number of AED,

compliance of AED and Serum AED level were not associated with ADHD among children and adolescents with Epilepsy, as noted in table 8.

Table 9: The summary of the Univariate Logistic Regression analysis of psychiatric and medical comorbidity variables*

Variable	β(SE)	Wald, df	Unadjusted OR	P value
Comorbid Psychiatric Disorder No Yes	 Reference -19.184(4.019)	 0.000,1	 0.000	 1.000
Treating Psychiatric Disorder No Yes	 Reference 19.184(4.019)	 0.000,1	 2.146	 1.000
Vitamin D Level	**0.067(0.033)**	**4.225,1**	**1.069**	**0.040**
Medical Comorbidity None Present	 Reference 0.245(1.109)	 0.049,1	 1.278	 0.825
Treating Medical Comorbidity No Yes	 Reference -0.237(0.585)	 0.164,1	 0.789	 0.686

*= constant included in all analyses.

Table 9 documents that only the factor of low vitamin D level was statically significantly associated with ADHD when compared with normal levels of vitamin D level. The children and adolescents with low vitamin D level were at 1 fold at risk of being associated with ADHD among this population. The comorbid psychiatric disorder, medical comorbidity, and treatment of other comorbidity were not associated with ADHD in Epilepsy.

Table 10: The summary of the Univariate Logistic Regression analysis of the family history of ADHD, Epilepsy and comorbidity variables*

Variable	β(SE)	Wald, df	Unadjusted OR	P value
Family History of ADHD				
No	Reference			
Yes	-0.057(1.090)	0.003,1	0.944	0.958
Degree of Family Member with ADHD				
1st	Reference			
2nd,3rd	-0.045(0.567)	0.006,1	0.956	0.937
Family History of Epilepsy				
No	Reference			
Yes	0.243(0.529)	0.212,1	1.275	0.645
Degree of Family Member with Epilepsy				
1st	Reference			
2nd,3rd	-0.189(0.238)	0.636,1	0.827	0.425
Family History of Mental Illness				
No	Reference			
Yes	-19.385(7.735)	0.000,1	0.000	0.998
Degree of Family Member with Mental Illness				
1st	Reference			
2nd,3rd	16.357(4.421)	0.000,1	1.270	0.997
Family History of Mental Retardation				
No	Reference			
Yes	**1.814(0.700)**	**6.706,1**	**6.133**	**0.010**
Degree of Family Member with Mental Retardation				
3rd and above	Reference			
2nd	**1.881(0.808)**	**5.421,1**	**6.562**	**0.020**

*= constant included in all analyses.

Table 10 summarizes the family history of ADHD, Epilepsy and other comorbidities. The factors of family history of intellectual disability and the degree of relationship of the family member with intellectual disability were statically significantly associated with ADHD. The presence of family history of intellectual disability, when compared with no such history, was 6 times more at risk of being associated with ADHD. Similarly, the closer the relationship between the family members with an intellectual disability, 6.5 times is the risk of ADHD being noted in this population with Epilepsy.The family history of ADHD, the degree of relation with the family member of ADHD, family history of Epilepsy, the degree of relationship with the family member with Epilepsy, family history of mental illness, the degree of relationship with the member with mental illness were not associated with ADHD.

Table 11: The summary of the Multivariate Logistic Regression analysis of the demographic and family variables[*,†]

Variable	β(SE)	Wald, df	Adjusted OR	95% CI of OR		P value
				Lower	Upper	
Age (years)	-0.073(0.084)	0.751,1	0.930	0.789	1.096	0.386
Gender Girls Boys	 Reference 0.182(0.546)	 0.112,1	 1.200	 0.412	 3.498	 0.738
SES Upper Middle & Lower	 Reference 0.378(0.335)	 1.273,1	 1.460	 0.757	 2.816	 0.259
Type of Family Nuclear Extended/Joint	 Reference 0.404(0.285)	 2.001,1	 1.497	 0.856	 2.620	 0.157
Total Family Member	0.106(0.067)	2.543,1	1.112	0.976	1.268	0.111
Number of Siblings	0.421(0.281)	2.245,1	1.523	0.878	2.642	0.134
Birth Order First Second,Third,Forth	 Reference 0.218(0.290)	 0.569,1	 1.244	 0.705	 2.195	 0.450
Type of Family Nuclear Extended/Joint	 Reference 0.404(0.285)	 2.001,1	 1.497	 0.856	 2.620	 0.157

[*]= constant included in all analyses.
[†]= ADHD treatment controlled for its confounding effect.

Table 11 represents the relationship between demographic aswell family variables and ADHD in Epilepsy when the confounding variable of treatment for ADHD was controlled. The factors of the type of family and number of siblings that were significant in the univariate analysis lost their significance in the multivariate

regression analysis. The other factors related to demography and family did not gain significance.

Table 12: The summary of the Multivariate Logistic Regression analysis of the pregnancy-related variables[*,†]

Variable	β(SE)	Wald, df	Adjusted OR	95% CI of OR		P value
				Lower	Upper	
Term						
Full term	Reference					
Preterm	-19.041(2.010)	0.000,1	0.000	0.000	0.000	0.999
Post-term	-19.041(4.019)	0.000,1	0.000	0.000	0.000	1.000
Duration of Labor						
Normal	Reference					
Prolonged	0.323(0.271)	1.419,1	1.381	0.812	2.350	0.234
Type of Delivery						
Normal	Reference					
Instrumental	-18.852(2.842)	0.000,1	0.000	0.000	0.	0.999
Operation	0.370(0.528)	0.491,1	1.448	0.514	4.079	0.483
Abnormal Presentation						
No	Reference					
Yes	-19.013(4.019)	0.000,1	0.000	0.000	0.0	1.000

[*]= constant included in all analyses.
[†]= ADHD treatment controlled for its confounding effect.

Table 12 represents the relationship between pregnancy-related variables and ADHD in Epilepsy when the confounding variable of treatment for ADHD was controlled. The factors of the term at pregnancy, duration of labor, type of delivery and abnormal fetal presentation were not significant in the multivariate analysis as was with univariate analysis.

Table 13: The summary of the Multivariate Logistic Regression analysis of the peri-natal variables[*,†]

Variable	β(SE)	Wald, df	Adjusted OR	95% CI of OR		P value
				Lower	Upper	
Low Birth Weight No Yes	 Reference -0.310(1.076)	 0.083,1	 0.733	 0.089	 6.041	 0.773
Birth Asphyxia No Yes	 Reference 0.887(0.839)	 1.119,1	 2.429	 0.469	 12.573	 0.290
HIE No Yes	 Reference -19.013(4.019)	 0.000,1	 0.000	 0.000	 0.	 1.000
Sepsis No Yes	 Reference -19.013(4.019)	 0.000,1	 0.000	 0.000	 0.	 1.000
Neonatal Jaundice No Yes	 Reference -1.028(0.849)	 1.465,1	 0.358	 0.068	 1.890	 0.226

[*]= constant included in all analyses.
[†]= ADHD treatment controlled for its confounding effect.

Table 13 represents the relationship between perinatal variables and ADHD in Epilepsy when the confounding variable of treatment for ADHD was controlled. Thus the factors of low birth weight, birth asphyxia, hypoxic-ischemic encephalopathy, neonatal sepsis and neonatal jaundice like in the univariate analysis were not associated with ADHD in multivariate analysis as well.

Table 14: The summary of the Multivariate Logistic Regression analysis of cognitive and educational variables[*,†]

Variable	β(SE)	Wald, df	Adjusted OR	95% CI of OR		P value
				Lower	Upper	
Developmental Milestones						
On time	Reference					
Delayed	0.358(0.684)	0.274,1	1.431	0.374	5.471	0.601
Current Academic Standard	-0.085(0.080)	1.139,1	0.918	0.785	1.074	0.286
Academic Performance						
Excellent						
Above Average	Reference					
Average	17.648(7.464)	0.000,1	4.616	0.000	0.	0.998
Somewhat Problematic	18.969(7.464)	0.000,1	1.731	0.000	0.	0.998
Problematic	20.287(7.464)	0.000,1	6.462	0.000	0.	0.998
	19.817(7.464)	0.000,1	4.039	0.000	0.	0.998
Intelligence Quotient						
Average	Reference					
Borderline	-1.825(1.268)	2.070,1	0.161	0.013	1.936	0.150
Mild	-0.511(1.390)	0.135,1	0.600	0.039	9.156	0.713
Moderate	-0.693(1.458)	0.226,1	0.500	0.029	8.706	0.634

[*]= constant included in all analyses.
[†]= ADHD treatment controlled for its confounding effect.

Table 14 represents the relationship between cognitive and educational variables and ADHD in Epilepsy when the confounding variable of treatment for ADHD was controlled. The factors of intelligence quotient type that were significant in the univariate analysis lost their significance in the multivariate regression analysis. The other factors of delay in developmental milestones, a current academic level achieved and current academic performance ability did not gain significance.

Table 15: The summary of the Multivariate Logistic Regression analysis of Epilepsy-related variables[*,†]

Variable	β(SE)	Wald, df	Adjusted OR	95% CI of OR		P value
				Lower	Upper	
Age of Onset	-0.006(0.007)	0.814,1	0.994	0.981	1.007	0.367
Age of Diagnosis	-0.007(0.007)	1.028,1	0.993	0.981	1.006	0.311
Duration of Disease	0.001(0.007)	0.010,1	1.001	0.988	1.014	0.918
Seizure Semiology	0.337(0.548)	0.378,1	1.401	0.479	4.098	0.538
Seizure Syndrome	0.051(0.062)	0.675,1	1.052	0.932	1.188	0.411
EEG Normal Abnormal	 Reference -0.195(0.527)	 0.137,1	 0.823	 0.293	 2.313	 0.711
MRI/CT MRI-N CT-N MRI Subtle	 Reference -1.107(1.189) -1.540(1.551)	 0.867,1 0.987,1	 0.331 0.214	 0.032 0.010	 3.397 4.477	 0.352 0.321
Seizure Frequency 1Seizure/severalyears 1-11 Seizures/year 1-3 Seizures/month **1-6 Seizures/week** Daily Seizure	 Reference 2.288(1.296) 1.934(1.263) **2.627(0.772)** 1.192(0.754)	 2.940,1 2.344,1 **11.592,1** 2.496,1	 9.222 6.917 **13.83** 3.294	 0.728 0.582 **3.049** 0.751	 116.87 82.231 **62.766** 14.450	 0.086 0.126 **0.001** 0.114
Duration since last Seizure	**-0.059(0.026)**	**5.088,1**	**0.943**	**0.896**	**0.992**	**0.024**

[*]= constant included in all analyses.
[†]= ADHD treatment controlled for its confounding effect.

Table 15 represents the relationship between Epilepsy-related variables and ADHD in Epilepsy when the confounding variable of treatment for ADHD was controlled. The two variables of seizure frequency and duration since last seizure were

statically and significantly were related to the ADHD in Epilepsy as in the univariate analysis. The frequency of seizures at 1- 6 times a week was 13.8 times was related with ADHD in Epilepsy. The frequency of 1-11 times a year showed only statistical trends toward association with Epilepsy. The other Epilepsy was not associated with ADHD in Epilepsy. Also, the duration since the last seizure showed that longer the duration less is the risk of being associated with ADHD with Epilepsy.

Table 16: The summary of the Multivariate Logistic Regression analysis of Epilepsy treatment-related variables[*,†]

Variable	**β(SE)**	**Wald, df**	**Adjusted OR**	**95% CI of OR**		**P value**
				Lower	**Upper**	
AED	19.020(2.842)	0.000,1	1.820	0.000	0.	0.999
Number of AED No AED Single/Multiple AED	 Reference 0.528(0.318)	 2.573,1	 1.696	 0.909	 3.163	 0.097
Current Seizure Control Yes **No**	 Reference **2.020(0.606)**	 **11.103,1**	 **7.537**	 **2.297**	 **24.725**	 **0.001**
Compliance of AED Yes No	 Reference 19.013(4.019)	 0.000,1	 1.808	 0.000	 0.	 1.000
Drug Serum Level Adequate Inadequate/Not Done	 Reference 0.645(0.666)	 0.940,1	 1.907	 0.517	 7.028	 0.332

[*]= constant included in all analyses.
[†]= ADHD treatment controlled for its confounding effect.

Table 16 represents the relationship between Epilepsy treatment-related variables and ADHD in Epilepsy when the confounding variable of treatment for ADHD was controlled. The only factor statically significantly associated was the current control of seizures. Lack of current seizure control was 7.5 times more at risk of being associated with ADHD in Epilepsy. The other Epilepsy treatment-related factors were not associated with ADHD in Epilepsy.

Table 17: The summary of the Multivariate Logistic Regression analysis of psychiatric and medical comorbidity variables[*,†]

Variable	**β(SE)**	**Wald, df**	**Adjusted OR**	**95% CI of OR**		**P value**
				Lower	**Upper**	
Comorbid Psychiatric Disorder No Yes	Reference -19.013(4.019)	0.000,1	0.000	0.000	0.	1.000
Treating Psychiatric Disorder No Yes	Reference 19.013(4.019)	0.000,1	1.808	0.000	0.	1.000
Vitamin D Level	**0.072(0.039)**	**3.420,1**	**1.075**	**0.996**	**1.161**	**0.064**
Medical Comorbidity No Yes	Reference 0.427(1.114)	0.147,1	1.533	0.173	13.606	0.701
Treating Medical Comorbidity No Yes	Reference -0.335(0.586)	0.326,1	0.715	0.227	2.258	0.568

[*]= constant included in all analyses.
[†]= ADHD treatment controlled for its confounding effect.

Table 17 represents the relationship between psychiatric and medical comorbidity variables and ADHD in Epilepsy when the confounding variable of treatment for ADHD was controlled. The only factor that demonstrated a statically significant trend towards being a risk for ADHD in Epilepsy was low serum vitamin D level.The risk of ADHD in Epilepsy was 1 fold more with low serum vitamin d level in comparison to normal vitamin serum level.The other psychiatric and medical comorbidity were not associated with ADHD.

Table 18: The summary of the Multivariate Logistic Regression analysis of the family history of ADHD, Epilepsy and comorbidity variables[*,†]

Variable	β(SE)	Wald, df	Adjusted OR	95% CI of OR		P value
				Lower	Upper	
Family History of ADHD						
No	Reference					
Yes	-0.125(1.095)	0.013,1	0.882	0.103	7.546	0.909
Family History of Epilepsy						
No	Reference					
Yes	0.082(0.608)	0.018,1	1.086	0.330	3.572	0.892
Family History of Mental Illness						
No	Reference					
Yes	19.213(7.735)	0.000,1	2.209	0.000	0.	0.998
Family History of Mental Retardation						
No	Reference					
Yes	**2.037(0.712)**	**8.179,1**	**7.667**	**1.898**	**30.963**	**0.004**
Degree of Family Member with Mental Retardation						
3rd and above.	Reference					
2nd	**2.089(0.817)**	**6.539,1**	**8.077**	**1.629**	**40.053**	**0.011**

[*]= constant included in all analyses.
[†]= ADHD treatment controlled for its confounding effect.

Table 18 represents the relationship **betwee**n family history of ADHD, Epilepsy and comorbidity variables and ADHD in Epilepsy when the confounding variable of treatment for ADHD was controlled. As with univariate, the multivariate analysis

also demonstrated that family history of intellectual disability and the degree of familial relationship with the member of intellectual disability was 7.6 times and 8 times at risk of being associated with ADHD. The family history of other illness was not associated with ADHD.

VI: DISCUSSION

This section briefs the findings and discusses them in the light of the existing research findings in these interesting overlapping disorders of ADHD and Epilepsy, lists out the strengths and caveats of the study, its utility as well as future directions.

VI. a. Summary of findings in the study.

The overall prevalence of ADHD in participants is 11.7% and was more among girls and children.Children and adolescents with Epilepsy, from extended or joint family, the total number of a sibling, lower intelligence quotient, seizure frequency and duration since last seizure, no current seizure control was significantly associated with ADHD. Also, the presence of family history of intellectual disability and the closer relationship to the person intellectual disability were statically significantly associated with ADHD.

None of the factors namely the term at birth, duration of labor, type of delivery, the fetal presentation were associated with ADHD in children with Epilepsy. Similarly, none of the factors namely the Low birth weight, birth asphyxia, presence of evidence of hypoxic-ischemic encephalopathy, neonatal sepsis, and neonatal jaundice, delayed developmental milestones, current academic level achieved and academic performance abilities were not associated with ADHD.

Among the factors, related Epilepsy and its treatment, dose of AED, number of AED, compliance of AED and Serum AED level were not associated with ADHD

among children and adolescents with Epilepsy. Family histories of ADHD or psychiatric and medical comorbidities were also not related to ADHD among children and adolescents with Epilepsy.

VI. b. Comparisons of findings in the study.

Prevalence:

The worldwide prevalence of ADHD in children ranges from 20% to 38% in various studies (11–13), while in India the prevalence of ADHD in Epileptic children was around 23.4%(129). The overall prevalence of ADHD in participants is 11.7% in our study. It supports that finding that Epilepsy is associated with ADHD though overall prevalence in this study was low which could be due to different methodology, different study population, and setting.

Demographic and Family Variable:

The study found that in the age group below 10 years the prevalence of ADHD is 15 %, while above 10 years of age the prevalence was 6 %. This supports various studies which show that the prevalence of ADHD decreases with increasing age(60).

Within gender, 10.3% of male and 14.3% of the female were diagnosed with ADHD, which supports that the gender difference in term of the prevalence of ADHD in children and adolescents was much less as compared to children without Epilepsy.(11, 68, 82)

The socioeconomic status was not associated with ADHD in this study but another similar study conducted in Indian population showed association with upper and upper-middle socioeconomic status(129).

Pregnancy-related variables:

None of the factors namely the Term at birth, duration of labor, type of delivery, the fetal presentation were associated with ADHD in children with Epilepsy. No previous study conducted, show any association and report similar finding as this study.

Perinatal variables

Low birth weight, birth asphyxia, the presence of evidence of hypoxic-ischemic encephalopathy, neonatal sepsis, and neonatal jaundice were found associated with ADHD in children with Epilepsy in this study. Previous studies give ambivalent results and most of these studies were conducted on small sample size.

Cognitive and educational variables

This study documented that the intelligence quotient was associated with the ADHD. This was contrary to another large study where intelligence quotient had no such association.(131). Our study showed that having the borderline intelligence was associated 4.5 times and having a mild intellectual disability was associated with 4.2 times of having ADHD.

Epilepsy-related variables

The seizure frequency significantly associated with ADHD but previous studies do not support this finding(132).

Previous studies show that the seizure semiology, seizure syndrome, EEG abnormality, and imaging abnormalities were not associated with ADHD in children with Epilepsy in this study. This study supports the finding from the previous study(132). The age of the onset and duration of Epilepsy was not found to be associated with ADHD in this study but a similar study done in China by Kwong et al shows association in with both variables(132).

Epilepsy treatment-related variables

No current control of seizure was statically significantly associated with ADHD in the present study which is contrary to the findings in the previous large studies where no such association was found(132). Not having current seizure control when compared with achieving current seizure control was 7 times at risk of being related to ADHD in the present study. On the other hand, previous studies support an association with a number of AED but the present study does not support this association with ADHD among children and adolescents with Epilepsy(132).

Psychiatric and medical comorbidity variables

The comorbid psychiatric disorder had shown association in previous studies and same is supported by this study.Presence of medical comorbidity has been shown to have an association with ADHD in children with Epilepsy(132), but this is not supported by this study.

Family history of ADHD, Epilepsy and comorbidity variables

The family history of ADHD or mental illness was not associated with ADHD. This was supported by similar finding in a recent Indian study(129), but other study

conducted in Kwong et al showed a positive association with first degree relative with psychiatric illness(132).

VI. c. Strengths of the study:

1. The study design included multiple variables associated with ADHD in participants.
2. The diagnosis of ADHD made by a psychiatrist was supported by ICD-10 diagnosis and Vanderbilt scale for ADHD.
3. The sample size required was achieved and thus the power of the findings was not compromised.
4. The diagnosis of Epilepsy was made by Pediatric neurologist based on ILAE criteria, thus chances of misdiagnosis of Epilepsy was minimised.
5. The study sample population is similar in terms of the socio-demographic profile of earlier Indian studies and hence the results can be compared to existing literature.
6. Since the participants represented from different parts of the country the findings can be generalized clinically.

VI. d. Limitations of the study:

This study was conducted in a tertiary care set up, hence generalization of the study results to primary and secondary care settings is not possible.

The sampling was not randomized and hence sampling errors are possible.

In view of chronicity of symptoms and caregivers not always accompanying the participants, the reliability of the caregiver's information was sometimes questionable.

There is are limited similar studies done in past in India thus adequate data to compare the finding are not available.

VI.e. Utility of the study:

This study has documented the prevalence of ADHD in children and adolescents with ADHD as well as identifying the risk and protective factor associated with this condition in this population. Thus this study paves the way to the development of a score card for predicting the risk of developing ADHD among children and adolescents with Epilepsy.

VI. f. Future directions:

Larger studies with multi-centric methodology are required to further confirm the established prevalence and predictive factors are required which should have representation from multiple socio-cultural backgrounds. Studies should include samples from primary and secondary care settings to improve the generalizability of the findings.

VI.g. Conclusion

The two hypotheses, on the prevalence and risk factors, were substantiated in this study. The study has proved the proposed hypothesis that the prevalence of ADHD in the children and adolescents with Epilepsy is different than the prevalence of ADHD in children and adolescents in general population. The risk factors

associated with ADHD in Epileptic is also different from the risk factor associated with ADHD in general population as compared in the literature survey.

VII: SUMMARY

1. The two hypotheses on the prevalence and risk factors associated with ADHD among children and adolescents were studied and established as proposed.
2. The prevalence of ADHD in children with Epilepsy is about 12%, and thus much higher than in general population.
3. The prevalence of ADHD among children was more than in adolescent with Epilepsy as expected.
4. The prevalence of ADHD was more among girls than among boys, which the reverse of that noted in the general population.
5. The factors being from an extended or joint family, a higher number of a sibling, lower intelligence quotient, high seizure frequency and short duration since last seizure, no current seizure control, the presence of a family member with an intellectual disability and the closeness of the family relationship of that person were statically associated with ADHD.
6. The *a priori* sample size was collected and the power of the study was maintained.
7. The sampling and assessment bias was minimized with appropriate sampling techniques and diagnosis of Epilepsy and ADHD by two independent teams respectively.
8. Generalizability remains a caveat as the study was conducted in a tertiary-care setting.

9. This study opens the way for developing risk scores for developing ADHD among those children and adolescent with Epilepsy.
10. Multi-centric studies including participants from primary and secondary care settings are suggested.

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IX: APPENDIX

1. Information sheet in English.
2. Information sheet in Hindi
3. Information sheet in Bangla
4. Information sheet in Tamil.
5. Pro Forma for collecting data.
6. Vanderbilt ADHD Parent Assessment Scale- English.
7. Vanderbilt ADHD Parent Assessment Scale-Hindi
8. Vanderbilt ADHD Parent Assessment Scale -Bangla
9. Vanderbilt ADHD Parent Assessment Scale –Tamil
10. Consent Form-English
11. Consent Form-Hindi
12. Consent Form-Bangla
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14. Child Assent-English
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18. Data View
19. Variable View

APPENDIX-1

INFORMATION SHEET-English

Christian Medical College Vellore
Department of Psychiatry & Department of Neurology

***Title*: A study ofprevalence and factors associated with attention deficit hyperactivity disorder in Children and Adolescents with Epilepsy.**

You and your ward are being requested to take part in a study which aims to see the prevalence of attention deficit hyperactivity disorder in children and adolescents with epilepsy, and their clinical profile, along with their social demographic characteristics. It also aims to study effect of factors like duration of epilepsy, age of onset of epilepsy, anti-epileptic used, subtype of epilepsy and control of seizure, on attention deficit hyperactivity disorder distribution. It is known that attention deficit hyperactivity disorder and epilepsy can individually effect the learning, social and behavioral development of children. These two being together is expected to have greater implication on children development in all aspects. Such children are at known risk for academic underachievement which can be due to inattention and hyperactivity, and appropriate treatment of these problems might improve the scholastic performance.

This study would help us to identify the vulnerable children and factors affecting overall implication and thus taking necessary steps for management for the same in future.

If you take part what will you have to do?

If you agree to take part in the study, you will be required to undergo a psychiatric clinical evaluation along with your ward. You will be requested to respond on one standardized interview schedules, namely Vanderbilt Assessment Scale and also to assist in filling up the socio-demographic and clinical details in a form. You and your ward will undergo an interview for assessing mental development using a standard Developmental Screening Scale. The socioeconomic status will also be evaluated with the help of a standardized

rating scale. The approximate time for this evaluation would be about 1 and a half hour. You or your ward will not be given any extra medications or be subject to any newdiagnostic tests or procedure.

Can you withdraw from the study at any point?

You can withdraw your consent at any point during the process of psychiatric, clinical and psychosocial evaluation. However not consenting or withdrawal from the study will not hamper the care provided by the hospital to your ward.

What will happen if you develop any study related injury?

Since there are no invasive procedures or medications involved, we do not foresee any chance of injury due to our process of evaluation.

Do you have to make any extra payments for the evaluation?

No extra money will be charged for this evaluation process.

What happens after the study is over?

After the evaluation is over and if any psychiatric disorder is diagnosed, then the child will be referred to the CAP unit of Department of Psychiatry for further treatment. However the cost of treatment will have to be borne by the patient. In this regard no concession will be given.

Will your personal details be kept confidential?

The results of this study will be published in a medical journal but you will not be identified by name in any publication or presentation of results. However, your medical notes may be reviewed by people associated with the study, without your additional permission, should you decide to participate in this study.

If you have any further questions, please ask Dr.Yogendra Singh, (Telephone/mobile no: 0416 2284307/ 9585184871, email: dryogendrasingh@yahoo.com

APPENDIX-2

INFORMATION SHEET-Hindi

क्रिश्चियन मेडिकल कॉलेज,वेल्लोर

मनोरोगविभागएवंन्यूरोलाजीविभाग

शीर्षक :मिर्गीव्याधिग्रस्तबच्चोंऔरकिशोरोंमें, ध्यानआभावसक्रियताविकारकीव्यापकताऔरसाथमेजुड़ेकारकोंकाअध्ययन।

जानकारीपत्र

ध्यानआभावसक्रियताविकारसेव्याधिग्रस्तबच्चोंऔरकिशोरोंमेमिर्गीकेसाथऔरउनकेसामाजिकजनसांख्यकीयविशेषताओंकेसाथ-
साथअनेकनैदानिकप्रोफाइलकेप्रसारकोदेखनेकेउद्देश्यसेआपऔरआपकेवार्डकोएकअध्ययनमंे भागलेनेकेलियेअनुरोधकियाजारहाहै।इसमेंमिर्गीकीअवधि, मिर्गीशुरुआतकीउम्र, मिर्गीकिदवाकीशुरूआत, मिर्गीकेउपप्रकारऔरनियंत्रण,
ध्यानआभावसक्रियताविकारवितरणफैलावजैसेकारकोंकेप्रभावकाअध्ययनकरनाहै।यहज्ञातहैकिध्यानआभावसक्रियताविकारऔरमिर्गीबच्चोंकीअलग-अलगसीखने,
सामाजिकऔरव्यवहारिकविकासपरप्रभावकरसकतेहैं।उम्मीदहैकिइनदोनोंकेएकसाथहोनेकेनातेसभीपहलुओंमेंबच्चोंकेविकासपरअधिकसेअधिकनिहितार्थहै।ऐसेबच्चेजोशैक्षणिकउपलब्धिसेदूर,
जोआनाकानीसक्रियताकेकारणहोसकताहैऔरइनसमस्याओंकाउपयुक्तउपचारसेशैक्षिकप्रदर्शनमेंसुधारहोसकताहै।

इसअध्ययनसेहमेंकमजोरबच्चोंऔरसमग्रनिहितार्थकोप्रभावितकरनेमेंमददमिलेगी।इसप्रकारभविष्यमेंउनकारकोंकीपहचानकरकेप्रबंधनकेलियेआवश्यककदमउठायेगी।

यदिभागलेनाहैतोआपकोक्याकरनाहोगा?

यदिआपइसअध्ययनमेंभागलेनेकेलियसहमतहै,
तोआपकोअपनेवार्डमेंएकमनोरोगनैदानिकमूल्यांकनसेगुजरनाआवश्यकहोजायेगा।आपकोएकमानकीकृमतसाक्षात्कारकार्यक्रमअर्थात्टंदकमतइपसजआकलनपैमानेपरआकलनकरनेऔरसामाजिकजनसांख्यकीयऔरनैदानिकजानकारीकाप्रपत्रभरनेमेंसहायताकेलियेअनुरोधकियाजायेगा।आपकोऔरआपकेवार्डकोएकमानकविकासस्क्रीनिंगपैमानेकाउपयोगमानसिकविकासकाआकलनकरनेकेलिएएकसाक्षात्कारसेगुजरनाहोगा।सामाजिक-आर्थिकस्थितिकीएकमानकीकृतरेटिंगस्केलकेमूल्यांकनमेंमददमिलेगा।इसमूल्यांकनकेलियेअनुमानितसमयएकऔरआधाघंटाहोगा।आपयाआपकेवार्डकाकोईभीअतिरिक्तदवाएंयाकिसीभीनयेनैदानिकपरीक्षणयाप्रक्रियाओंसेगुजरनेनहीदियाजायेगा।

क्याआपकिसीभीबिन्दपे ,अध्ययनसेवापसलेसकतेहै?

आपमनोरोग,
नैदानिकऔरमनोसामाजिकमूल्यांकनकीप्रक्रियाकेदौरानकिसीभीबिन्दुपरअपनीसहमतिवापसलेसकतेहै।हालांकि आपकीनसहमतियवापसीसेअध्ययनमेंआपकेवार्डकेलिये,
अस्पतालद्वारादेखभालप्रदानकीजानेवालीमेंबाधानहींहोगी।

क्याहोगायदिआपकोअध्ययनसम्बन्धितचोटलगजाय?

हमारेमूल्यांकनकीप्रक्रियाकेकारणवहांकोईआक्रामकप्रक्रियाओंयादवाओं,
चोटकाकोईभीमौकेकीउम्मीदनहींहै।

क्यामूल्यांकनकेलियेकोईभीआपकोअतिरिक्तभुगतानदेनाहोगा?

इसमूल्यांकनप्रक्रियाकेलियेअतिरिक्तपैसेनहींवसूलेजायेगे।

अध्ययनपूराहोनेकेबादक्याहोताहै?

मूल्यांकनखत्महोनेकेबादऔरयदिकिसीभीमनोरोगविकारकानिदानहुआ,
तबबच्चोकोमनोरोगविभागकीबच्चेऔरकिशोरमनोरोगइकाईकोआगेइलाजकरनेकेलियेसंदर्भितकियाजायेगा।हालांकिरोगीद्वाराइलाजकाखर्चवहनकरनाहोगा।इससम्बन्धमेंकोईरियायतनहींदीजायेंगी।

आपकेव्यक्तिगतविवरणगोपनीयरखाजायेगा?

इसअध्ययनकेपरिणामोंकोमेडिकलजर्नलमेंप्रकाशितकियाजायेगा,
लेकिनप्रकाशनयापरिणामोंकीप्रस्तुतिमेंआपकीनामद्वारापहचाननहींकीजायेगी।हालांकिआपकेमेडिकलनोट्सकी अध्ययनकेसाथजुडेलोगोंद्वाराआपकेअतिरिक्तअनुमतिकेबिनासमीक्षाकीजासकतीहैयदिआपकइसअध्ययनमेंभाग लेनेकेलियेनिर्णयलेतेहै।

अगरआपकेपासकोईप्रश्नहै, तोकृपयासम्पर्ककरें-

डॉ.योगेन्द्रसिंह) टेलीफोन/मोबाइलनम्बर :04162284307/9585184871)

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APPENDIX-3

INFORMATION SHEET-Bangla

খ্রিষ্টান মেডিকেল কলেজ ভেলোর
মনোরোগ ও স্নায়ুরোগ বিভাগ

শিরোনাম ঃ মৃগীরোগ যুক্ত শিশু ও বয়ঃসন্ধি কালের ছেলে ও মেয়েদের মধ্যে মনোযোগ ঘাতটি ও হাইপার অ্যাক্টিভিটি রোগের প্রাদুর্ভাব ও কারণ সম্পর্কিত গবেষণা।

তথ্যাবলী

আপনি এবং আপনার ছেলে বা মেয়েকে একটি সমীক্ষা যার শিশু ও মৃগীরোগ সঙ্গে বয়ঃসন্ধিকালের মনোযোগ ঘাটতি হাইপার অ্যাক্টিভিটিব্যাধি প্রকোপ "তাতে নাম" অংশ নিতে অনুরোধ করা হচ্ছে এবং তাদের ক্লিনিকাল প্রোফাইল, তাদের সামাজিক ডেমোগ্রাফিক বৈশিষ্ট্য সঙ্গে এবং মৃগীরোগের সময়কাল, মৃগীরোগ সূত্রপাতের বয়স মত কারণের প্রভাব অধ্যায়ন করার লক্ষ্যে কাজ করা হবে মৃগীরোগের, ব্যবহৃত ঔষধ মৃগীরোগ এবং খিচুনির নিয়ন্ত্রণ ইত্যাদির মনোযোগ ঘাটতি হাইপার অ্যাক্টিভিটিব্যাধি সম্বন্ধে এটা জানা যায় যে মনোযোগ ঘাটিত হাইপার অ্যাক্টিভিটিব্যাধি এবং মৃগীরোগ পৃথক ভাবে শিশুদের শিক্ষা, সামাজিক ও আচরণগত উন্নয়ন প্রভাবিত হতে পারে। এই দুটি একসঙ্গে সব দিক শিশুদের উন্নয়নে বৃহত্তর সংশে-ষ আছে বলে ধারণা করা হচ্ছে। এ ধরণের শিশুদের একাডেমিক মান অর্জনে ব্যর্থতা যা অসাবধানতা এবং হাইপার অ্যাক্টিভিটিএবং এই সমস্যার ঝুকি থাকে। যথাযথ চিকিৎসায় বুদ্ধি ও কর্মক্ষমতা বৃদ্ধি করার সুযোগ থাকে।

এই গবেষণায় আমাদের শিশুদের এবং সামগ্রিক উন্নতি প্রভাবিত করতে সাহায্য করবে এবং এই ভাবে ভবিষ্যতে একই পরিচালনার জন্য প্রয়োজনীয় পদক্ষেপ গ্রহণে চিহ্নিত করতে হবে।

প্র ঃ আপনি অংশ নিতে পারেন ও আপনাকে কি করতে হবে ?

উ ঃ আপনি গবেষণায় অংশ নিতে সম্মত হলে আপনি এবং আপনার ছেলে/মেয়ের একটি মানসিক ক্লিনিকাল মূল্যায়ন করা হবে। আপনাকে একটি ইন্টারভিউ শিডিউল যথা ভ্যান্ডারবিল্ট অ্যাসেসমেন্ট স্কেলে সাড়া এবং একটি ফর্মের মধ্যে আর্থ-ডেমোগ্রাফিক এবং ক্লিনিকাল তথ্য পূরণের জন্য অনুরোধ করা হবে। আপনি এবং আপনার ছেলে/মেয়ের মানসিক উন্নয়ন নির্ধারণের একটি স্ট্যান্ডার্ড রেটিং স্কেলের সাহায্যে মূল্যায়ন করা হবে। এই মূল্যায়নের জন্য আনুমানিক সময় প্রায় ১ এবং একটি অর্ধ ঘন্টা হবে। আপনাকে বা আপনার ছেলে/মেয়ের কোনো অতিরিক্ত ওষুধ দেওয়া হবে না বা কোন নতুন ডায়গনিস্টিক পরীক্ষা করা হবে না।

প্র ঃ আপনি কি যে কোন স্থানে অধ্যায়ন থেকে সম্মতি প্রত্যাহার করতে পারবেন ?

উ ঃ আপনি মানসিক ক্লিনিকাল ও মনোসামাজিক মূল্যায়ন প্রক্রিয়ার সময় যে কোন সময় আপনার সম্মতি প্রত্যাহার করতে পরেন। তবে অনুমোদন না বা অধ্যায়ন থেকে প্রত্যাহারের জন্য আপনার ছেলে/মেয়ের হাসপাতালের দ্বারা প্রদত্ত যত্ন ব্যাহত হবে না।

প্র ঃ এই গবেষণা কি কোন আঘাত সৃষ্টি করবে ?

উ ঃ যেহেতু কোন ক্ষতিকারক পদ্ধতি বা ঔষধ জড়িত নেই, তাই আমার মূল্যায়ন বা আমাদের প্রক্রিয়ার কারণে আঘাতের কোনো সুযোগ নাই।

প্র ঃ আপনাকে পরীক্ষা নিরীক্ষার জন্য কোন অতিরিক্ত অর্থ প্রদান করতে হবে কি ?

উ ঃ কোন অতিরিক্ত অর্থ এই মূল্যালয় প্রক্রিয়ার জন্য চার্জ করা হবে না।

প্র ঃ গবেষণার পর কি ঘটবে ?

উ ঃ পরীক্ষা নিরীক্ষার পরে যদি কোনো মানসিক ব্যাধি নির্ণয় করা হয়, তারপর সন্ড়ন আরও চিকিৎসার জন্য সাইকিয়াট্রি বিভাগের CAP ইউনিট এ পাঠানো হবে। তবে চিকিৎসার খরচ রোগীর দ্বারা বহন করতে হবে। এই বিষয় কোন ছাড় দেওয়া হবে না।

প্র ঃ আপনার ব্যাক্তিগত বিবরণ গোপনীয় রাখা হবে কি ?

উ ঃ এই গবেষণার ফলাফল একটি মেডিক্যাল জার্নালে প্রকাশ করা হবে কিন্তু আপনার কোন প্রকাশন বা ফলাফল উপস্থাপনায় নাম উলে-খ করা হবে না। যাই হোক, আপনার মেডিক্যাল নোট গবেষণার সঙ্গে যুক্ত মানুষের দ্বারা, আপনার অতিরিক্ত অনুমতি ছাড়া, পর্যালোচনা হতে পারে যদি আপনি এই গবেষণায় অংশ গ্রহণের সিদ্ধান্ড় নেন।

04162284307/9585184871, E-mail - dryogendrasingh@yahoo.comআপনার যদি কোন প্রশ্ন থাকে, তাহলে Dr. Yogendra সিং (টেলিফোন/মোবাইল নম্বরে যোগাযোগ কর"ন।

APPENDIX-4

INFORMATION SHEET-Tamil

கிறிஸ்தவக் கல்லூரி – வேலூர்

மன இயல், நரம்பியல் வளை

தலைப்பு: வலிப்பு நோய் கண்டுள்ள குழந்தை மற்றும் பருவமடைந்தோர்களில் ஏற்படும் "கவனச்சிதறலும் துறுதுறுப்பும்ஜஇ அதன் பரவல் நிலவரமும் அது தொடர்பான காரணங்கள் பற்றிய ஓர் ஆய்வு.

தகவல் தாள்

நீங்கள் உங்களுடைய மக்களும் வலிப்பு நோயுடன் கூடிய கவனச் சிதறலும் துறுதுறுப்பும் கண்டுள்ள குழந்தை மற்றும் பருவமடைந்தோர்கள் மருத்துவ விபரத்துடனும் பிற சமூக புள்ளி வபரங்களுடனும் இவ்வாய்வில் பங்கேற்க கேட்டுக்கொள்ளப்படுகின்றீர்கள். அதோடு இவ்வாய்வின் நோக்கம் வலிப்பின் கால அளவின் காரணங்களின் தன்மை, கவனச் சிதறல், துறுதுறுப்புக் கோளாரின் பரவல் ஆகியவை பற்றி அறிவதாகும். கவனச்சிதறலும் துறுதுறுப்பும், வலிப்பு நோயும் கல்வி கற்பதிலும், சமூக வளர்ச்சியிலும் குழந்தைகளில் பாதிப்பு ஏற்படுத்துமென அறியப்பட்ட ஒன்றாகும். இவ்விரண்டும் இணைந்து குழந்தை வளர்ச்சியில் பெறும் விளைவுகளை ஏற்படுத்தும். இத்தகைய குழந்தைகளின் கல்வித்தரக் குறைவும் கவனக் குறைவும் அதை மீறிய இயக்கமுமே காரணமாகும், தகுந்த மருத்துவத்தால் கல்வித் தரம் உயரக்கூடும்.

இந்த ஆய்வு பலவீனமான குழந்தைகளையும் அதன் முழுமையாக தரத்தையும் கண்டு அறிந்து பின் வரும் மக்களும் உதவி, செயல்படும் பொருட்டே ஏற்றடுத்தப்பட்டுள்ளது.

இந்த ஆய்வில் கலந்து கொள்ள ஒப்புதல் அளித்தால் நீங்கள் செய்ய வேண்டியது என்ன?

ஆய்வில் கலந்து கொள்ள விருப்பம் தெரிவித்தால், நீங்களும் உங்கள் மக்களும் மனநல கணிப்பிற்கு உட்படவேண்டும். நீங்கள் முறையாக்கப்பட்ட

வாண்டர்பில்ஸ் அளவு முறையின் கீழ் பேட்டி காணப்பட்டு சமூக நிலவரம் மற்றும் மருத்துவம் பள்ளி பதிவேட்டில் பதிய உதவிசெய்யப்படுவீர்கள். நீங்களும் உங்கள் குழந்தைகளும் மன வளர்ச்சியை அறியும் பொருட்டு முறையான அளவையின் கீழ் பிரித்து அறியப்படுவீர்கள். சமூக பொருளாதார நிலையும் இதன் மூலம் அறியப்படும். இந்த ஆய்விற்கான நேரம் ஏறக்குறைய 1½ மணி நேரம். இதற்காக மேற்கொண்டு மாத்திலைகளோ அல்லது புதிய ஆய்வுகளுக்கோ உட்படுத்தப்பட மாட்டர்கள்.

இவ்வாய்வு துவங்கிய பின் இதனின்று விலக இயலுமா?

இவ்வாய்வின் மன மருத்துவ மற்றும் உளவியல் கணிப்பின் போது எந்நேரத்திலும் இதனின்று விலகிக் கொள்ளலாம். விலகுவதானால் உங்கள் வழக்கமான மருத்துவ சிகிச்சையில் உங்களுக்கு எவ்வித மாறுதலும் ஏற்படுவதற்கில்லை.

உடம்பை புண்படுத்தும் ஆய்வு முறைகளுக்கு உட்படுத்தப்படுவீர்களா?

இந்த ஆய்வு முறைகளில் உடம்பை காயப்படுத்தும் மருத்துவமுறைகள் ஏதும் இல்லை.

இந்த ஆய்விற்காக மேற்கொண்டு பணம் தேவைப்படுமா?

இதற்காக மேற்கொண்டு பணம் கொடுக்க வேண்டிய அவசியம் இல்லை.

ஆய்வு முடிவடைந்த பின் என்ன நிகழலாம்?

ஆய்வு முடிந்து நோய் கண்டறிந்தபின் உங்கள் குழந்தை, மற்றும் பருவமடைந்த குழந்தைகளின் மனநல மருத்துவப் பிரிவிற்கு மேற்படி மருத்துவ இதழ்களில் பிரசுரிக்கப்படும். ஆனால் உங்கள் பெயர் எந்த இதழ்களிலோ விளக்க உறைகளிலோ காட்டப்படுவதில்லை. இருப்பினும் இதை ஆய்வில் பங்கேற்போர்களால் உங்களுடைய கூடுதல் அனுமதியின்றி உங்களுடைய மருத்துவ விபரங்கள் இவ்வாய்வில் பங்கேற்க அனுமதி தந்தபின் பரிசீலிக்கப்படும்.

மேற்கொண்டு விபரங்களுக்கு னுச. யோகேந்திர சிங்

(தொலைபேசி / கைபேசி எண் - 0416-2284307/ 9585184871)

மின் அஞ்சல் : னசலழபநனெசயளளைபொளுலயாழழ.உழஅ

APPENDIX-5

Pro Forma for collecting data

Serial No:_____

Socio-demographic and Clinical Data Sheet

Name:_____ (initials) Hospital No: _____

Date of Birth: __ __/____/_____ Age: _____Years _____Months

Sex:____ Religion: _____ Mother Tongue:_____
SES:_____

Informant (relationship to patient):

I. Patient Related Factors

Perinatal History:

- Term: Full term/ Preterm/ Post term
- Duration of Labour: Normal/Prolonged
- Type of Delivery: Normal/Instrumental/Operation/Not Known
- Abnormal presentation: Yes/No
- Low Birth Weight: Yes/No
- Birth Asphyxia: Yes/No
- Hypoxic Ischemic Encephalopathy: Yes/No
- Neonatal Hypoglycemia: Yes/No
- Sepsis: Yes/No
- Neonatal Jaundice: Yes/No

Developmental Milestones:

Current academic standard:

Academic Performance:

I.Q:

II. Epilepsy Related Factors

- Age of onset of seizure:
- Age at diagnosis:
- Duration of Disease in Days/Months/Years:
- Seizure Semiology as per ILAE:
- Seizure Syndrome as per ILAE:
- EEG Report (past and latest):

- MRI/CT Scan:

- Anti-epileptic medication used in last 6 months: (drug /dosage)
    1.
    2.
    3.
    4.
- Current anti-epileptic medication and dosage:
    1.
    2.
    3.
    4.
    5.

- Currently Seizure controlled: Yes/ No

  Specify: Seizure frequency:

  Last clinical seizure (Date/Duration):

- Compliance with AED treatment: poor/good
- Additional laboratory reports:

  Drug Serum levels:

III.ADHD Diagnosis as per ICD-10 Criteria: Present/ Absent

- Change in ADHD symptoms with AED treatment: Yes/No

  If yes, specify:

- Taking Attention Deficit Hyperactivity treatment: Yes/No.
- If yes in above question, then mention drugs used in last 6 months:

  1.

  2.

- Other Comorbid Psychiatric Disorder: Yes/ No.
  - Specify if yes:
- Treatment of Comorbid Psychiatric Disorder, if any: Yes/No
  - Specify if yes:
- Medical Comorbidities: Yes/ No.
  - Specify if yes
- Treatment of Medical comorbidities, if any: Yes/No
  - Specify if yes

IV. Family Factors

- Type of family: Nuclear/Extended/ Joint
- Parents: Living together/Separated/Divorced
- Total No. of family members:
- No of siblings:
- Birth order of participant:
- Family history of attention deficit hyperactivity disorder: Yes/No
    - If yes, specify
- Family history of Epilepsy: Yes/no
    - If yes, specify
- Family history of other mental illness in immediate family member:

  Yes/No
    - If yes, specify

APPENDIX-6

Vanderbilt ADHD Parent Assessment Scale- English.

Vanderbilt Assessment Scale—PARENT Informant

Today's Date: _____ Child's Name: _____Date of Birth: _____

Hospital Number: _____ Parent's Phone Number: _____

Directions: Each rating should be considered in the context of what is appropriate for the age of your child. When completing this form, please think about your child's behaviors in the past 6 months.

Is this evaluation based on a time when the child was on medication / was not on medication /not sure.

Symptoms		Never	Occasionally	Often	Very Often
1.	Does not pay attention to details or makes careless mistakes with, for example, homework	0	1	2	3
2.	Has difficulty keeping attention to what needs to be done	0	1	2	3
3.	Does not seem to listen when spoken to directly	0	1	2	3
4.	Does not follow through when given directions and fails to finish activities (not due to refusal or failure to understand)	0	1	2	3
5.	Has difficulty organizing tasks and activities	0	1	2	3
6.	Avoids, dislikes, or does not want to start tasks that require ongoing mental effort	0	1	2	3
7.	Loses things necessary for tasks or activities (toys, assignments, pencils, or books)	0	1	2	3
8.	Is easily distracted by noises or other stimuli	0	1	2	3
9.	Is forgetful in daily activities	0	1	2	3
10.	Fidgets with hands or feet or squirms in seat	0	1	2	3
11.	Leaves seat when remaining seated is expected	0	1	2	3
12.	Runs about or climbs too much when remaining seated is expected	0	1	2	3
13.	Has difficulty playing or beginning quiet play activities	0	1	2	3
14.	Is "on the go" or often acts as if "driven by a motor"	0	1	2	3
15.	Talks too much	0	1	2	3
16.	Blurts out answers before questions have been completed	0	1	2	3
17.	Has difficulty waiting his or her turn	0	1	2	3
18.	Interrupts or intrudes in on others' conversations and/or activities	0	1	2	3
19.	Argues with adults	0	1	2	3
20.	Loses temper	0	1	2	3
21.	Actively defies or refuses to go along with adults' requests or rules	0	1	2	3
22.	Deliberately annoys people	0	1	2	3
23.	Blames others for his or her mistakes or misbehaviors	0	1	2	3
24.	Is touchy or easily annoyed by others	0	1	2	3

25.	Is angry or resentful	0	1	2	3
26.	Is spiteful and wants to get even	0	1	2	3
27.	Bullies, threatens, or intimidates others	0	1	2	3
28.	Starts physical fights	0	1	2	3
29.	Lies to get out of trouble or to avoid obligations (ie,"cons" others)	0	1	2	3
30.	Is truant from school (skips school) without permission	0	1	2	3
31.	Is physically cruel to people	0	1	2	3
32.	Has stolen things that have value	0	1	2	3

Symptoms (continued)		Never	Occasionally	Often	Very Often
33.	Deliberately destroys others' property	0	1	2	3
34.	Has used a weapon that can cause serious harm (bat, knife, brick, gun)	0	1	2	3
35.	Is physically cruel to animals	0	1	2	3
36.	Has deliberately set fires to cause damage	0	1	2	3
37.	Has broken into someone else's home, business, or car	0	1	2	3
38.	Has stayed out at night without permission	0	1	2	3
39.	Has run away from home overnight	0	1	2	3
40.	Has forced someone into sexual activity	0	1	2	3
41.	Is fearful, anxious, or worried	0	1	2	3
42.	Is afraid to try new things for fear of making mistakes	0	1	2	3
43.	Feels worthless or inferior	0	1	2	3
44.	Blames self for problems, feels guilty	0	1	2	3
45.	Feels lonely, unwanted, or unloved; complains that "no one loves him or her" 0		1	2	3
46.	Is sad, unhappy, or depressed	0	1	2	3
47.	Is self-conscious or easily embarrassed	0	1	2	3

Performance		Excellent	Above Average	Average	Somewhat of a Problem	Problematic
48.	Overall school performance	1	2	3	4	5
49.	Reading	1	2	3	4	5
50.	Writing	1	2	3	4	5
51.	Mathematics	1	2	3	4	5
52.	Relationship with parents	1	2	3	4	5
53.	Relationship with siblings	1	2	3	4	5
54.	Relationship with peers	1	2	3	4	5
55.	Participation in organized activities (eg, teams)	1	2	3	4	5

APPENDIX-7

Vanderbilt ADHD Parent Assessment Scale-Hindi

वेंडरबिल्ट**आकलन पैमाने – पैरेन्ट मुखबिर**

Today's Date:_____ Child's Name:_____ Date of Birth:_____

Hospital Number:_____ Parent's Phone Number: _____

निर्देश :प्रत्येक रेटिंग क्या आपके बच्चे की उम्र के लिए उपयुक्त है के संदर्भ में विचार किया जाना चाहिए । जब यह फार्म पूरा किया जाय तो कृपया अपने बच्चों के अतीत के 6 माह के व्यवहार पर समझ लें।

यह मूल्यांकन उस आधार पर है जब बच्चा दवा पर था/या दवा पर नहीं था/निश्चित नहीं है।

	लक्षण	कभी नहीं	कभी कभी	अक्सर	बहुत बार
1.	क्या विवरण पर ध्यान नहीं देता है या लापरवाहगलतियों करता है : उदाहरण में – गृहकार्य पर	0	1	2	3
2.	जब कार्य करने की आवश्यकता होती है तो क्या ध्यान रखने में कठिनाई होती है।	0	1	2	3
3.	सीधी कही हुयी बात सुनता प्रतीत नहीं होता है।	0	1	2	3
4.	दिये गये निर्देश का पालन नहीं करता और प्रक्रिया समाप्त करने में असफल हो जाता है।	0	1	2	3
5.	कार्यों और गतिविधियों के आयोजन में कठिनाई होती है।	0	1	2	3
6.	जिस कार्य में मानसिक प्रयास की आवश्यकता है उसे त्याग देता है, नापसन्द करता है या कार्य शुरू नहीं करना चाहता है।	0	1	2	3
7.	कार्य और प्रक्रिया करने में आवश्यक चीजों , को खो देता है । (खिलौनों, सौंपे गये कार्य, पेन्सिलें या किताबें)	0	1	2	3
8.	क्या शोर या अन्य उत्तेजनाओं से ,आसानी से विचलित होता है।	0	1	2	3

9	दैनिक गतिविधियों में भुलक्कड़ है।	0	1	2	3
10	सीट में हाथ या पैर छटपटाता या ऐंठता है।	0	1	2	3
11	जब सीट पे बैठे रहने की उम्मीद की जती है , तब वो सीट छोड़ देता है ।	0	1	2	3
12	जब सीट पे बैठे रहने की उम्मीद की जती है , तब वो चढ़ता या दौड़ता है।	0	1	2	3
13	शान्त खेल की गतिविधियों के खेलने में या शुरूआत में कठिनाई होती है।	0	1	2	3
14	हमेशा सक्रिय रहता है या अक्सर एसे कार्य करें जैसे की ''मोटर संचालित हो ''	0	1	2	3
15	बातचीत बहुत करता है।	0	1	2	3
16	प्रश्न पूरा करने के पहले ही बक देता है।	0	1	2	3
17	बारी की प्रतीक्षा में कठिनाई होती है।	0	1	2	3
18	दूसरों की बातचीत या प्रक्रिया में रूकावट या हस्तक्षेप करता है।	0	1	2	3
19	व्यस्कों के साथ तर्क करता है।	0	1	2	3
20	आपा खो देता है।	0	1	2	3
21	वयस्कों के अनुरोध या नियमों का पालन , सक्रियता से खारिज या मना कर देता है।	0	1	2	3
22	जान बूझकर लोगों को तंग करता है।	0	1	2	3
23	अपनी गलतियोंऔर दुर्व्यवहारके लिए दूसरों को दोषी ठहराता हैं।	0	1	2	3
24	भावुक हैं या दूसरों के द्वारा आसानी से नाराज हो जाता है।	0	1	2	3
25	क्या वह गुस्सा या आक्रोश मे रहता है।	0	1	2	3
26	क्यावो द्वेषी है और बदला लेना चाहता है।	0	1	2	3
27	दूसरों को गुण्डागर्दी, धमकाता या डराता है।	0	1	2	3
28	शारीरिक झगड़ा शुरू करता है।	0	1	2	3
29	कठिनाईयों से बचने के लिये झूठ बोलता है या दायित्वों से	0	1	2	3

	बचता है।				
30	बिना अनुमति स्कूल से भागता है।	0	1	2	3
31	लोगों पर शारीरिक रूप से क्रूर है।	0	1	2	3
32	मूल्यवान चीजें चुराता है।	0	1	2	3
33	जान बूझकर दूसरों की सम्पत्ति नष्ट करता है।	0	1	2	3
34	गम्भीर नुकसान पैदा करने वाले हथियार का इस्तेमाल किया है (बल्ला, चाकू, ईट, बन्दूक)	0	1	2	3
35	जानवरों पर शारीरिक रूप से क्रूर है।	0	1	2	3
36	जान बूझकर आग लगा कर नुकसान करता है।	0	1	2	3
37	किसी के घर, व्यवसाय या कार पे सेंध लगाया है ।	0	1	2	3
38	बिना अनुमति के रात भर बाहर रहा	0	1	2	3
39	घर से पूरी रात फरार रहा	0	1	2	3
40	किसी को यौन गतिविधि के लिये मजबूर कर दिया।	0	1	2	3
41	क्या भयभीत, उत्सुक या चिंतित है।	0	1	2	3
42	गलतियों के डर से नयी चीज करने का प्रयासनहीं करता है।	0	1	2	3
43	स्वयं को बेकार या निम्न महसूस करता है।	0	1	2	3
44	स्वयं को समस्याओं के लिये दोषी मानता है तथा दोषी महसूस करता है।	0	1	2	3
45	अकेला, अवांछित या अप्रिय महसूस करता है तथा शिकायत करता है कि कोई उसको प्यार नहीं करता।	0	1	2	3
46	दुखी या उदास है।	0	1	2	3
47	स्वयं के प्रति सजग है या सरलता से शर्मिंदा होता है।	0	1	2	3

	प्रदर्शन	**अति उत्कृष्ट**	**औसत से ऊपर**	**औसत**	**कुछ हद तक की समस्या**	**समस्या पैदा करने वाले**

48	कुल मिलाकर स्कूल का प्रदर्शन	1	2	3	4	5
49	पढ़ना	1	2	3	4	5
50	लेखन	1	2	3	4	5
51	गणित	1	2	3	4	5
52	माता–पिता के साथ सम्बन्ध	1	2	3	4	5
53	भाई–बहन के साथ सम्बन्ध	1	2	3	4	5
54	साथियों के साथ सम्बन्ध	1	2	3	4	5
55	संगठित गतिविधियों में भागीदारी (जैसे–टीमों में)	1	2	3	4	5

APPENDIX-8

Vanderbilt ADHD Parent Assessment Scale –Bangla

ভ্যান্ডারবিল্ট অ্যাসেসমেন্ট স্কেল উপস্থিত অভিভাবক

আজকের তারিখ ঃ _____ সন্ড়ানের নাম ঃ _____ জন্মের তারিখ _____ হাসপাতালের সংখ্যা ঃ _____ পিতামাতাদের ফোন নম্বর ঃ _____

নির্দেশ ঃ প্রতিটি রেটিং কি আপনার শিশুর বয়সের জন্য উপযুক্ত প্রেক্ষাপটে বিবেচনা করবেন। যখন এই ফর্মটি পূরণ করবেন, গত 6 মাসের মধ্যে আপনার সন্ড়ানের আচরণ সম্পর্কে মনে করে করবেন।

এই মূল্যায়ন যখন করা হয় তখন শিশু, ঔষধ খাচ্ছিল / ঔষধের উপর ছিল না / জানি না				
লক্ষণ	**না**	**কদাচিৎ**	**প্রয়াই**	**খুব প্রায়ই**
1. বিস্ড়রিত তথ্যের প্রতি মনোসংযোগ না করা বা মনোসংযোগের অভাবে ভুল করা, উদাহরণ্ ুবাড়ির কাজ করার সময়	০	১	২	৩
2. কি করতে হবে তাতে মনোসংযোগ করা	০	১	২	৩
3. সরাসরি কথা না শুনতে পাওয়া	০	১	২	৩
4. নির্দেশ পালনে অক্ষম এবং কার্যক্রম সময়ে শেষ করতে ব্যর্থ (ব্যর্থতা বা না বুঝতে পারার জন্য নয়)	০	১	২	৩
5. কাজ গোছাতে বা কার্যক্রম করতে অসুবিধায় পরা	০	১	২	৩
6. মানসিক সংযোগের প্রয়োজনতা এড়িয়ে চলে বা অপছন্দ করে	০	১	২	৩
7. কর্ম বা কার্যক্রম করার সময়ে (খেলনা, এসাইনমেন্ট, পেন্সিল বা বই প্রয়োজনীয় কিছু হারায়)	০	১	২	৩
8. সহজে গোলমালের বা অন্যান্য উদ্দীপনার দ্বারা বিভ্রান্ড় হয়	০	১	২	৩
9. দৈনন্দিন কার্যক্রম ভুল করা হয়	০	১	২	৩
10. হাত বা পায়ের সঙ্গে উসখুসানি বা সিটে বসে ছটফট করা	০	১	২	৩
11. আসন ছেড়ে উঠে যায় যখন আসনে উপবিষ্ট থাকা আশা করা হচ্ছে	০	১	২	৩
12. যখন উপবিষ্ট থাকবে বলে আশা করা হচ্ছে তখন দৌড়ায় অথবা বেয়ে উঠে	০	১	২	৩
13. শান্ড় খেলা কার্যক্রম আরম্ভ করতে বা খেলতে অসুবিধে হওয়া	০	১	২	৩
14. চলতে চলতে বা প্রায়ই "একটি মোটর দ্বারা চালিত" আচরণকারী অনুভব হওয়া	০	১	২	৩

15. খুব বেশী কথা বলে	০	১	২	৩
16. প্রশ্ন সম্পন্ন হবার আগে উত্তর দিয়ে দেওয়া	০	১	২	৩
17. সুযোগের জন্য অপেক্ষা করতে অসুবিধা হওয়া	০	১	২	৩
18. অন্যের কথোপকথনে এবং কার্যক্রমে বাধা দেওয়া	০	১	২	৩
19. বড়দের সঙ্গে তর্ক করা	০	১	২	৩
20. মেজাজ হারায়	০	১	২	৩
21. সক্রিয় ভাবে প্রাপ্তবয়স্কদের অনুরোধ বা নিয়ম সঙ্গে বরাবর যেতে অরাজি হওয়া	০	১	২	৩
22. ইচ্ছাকৃতভাবে মানুষকে বিরক্ত করা	০	১	২	৩
23. তার ভুল বা misbehaviors জন্য অন্যদের দায়ী করা	০	১	২	৩
24. অভিমানী বা সহজেই অন্যদের দ্বারা বিরক্ত হয়	০	১	২	৩
25. রাগ বা বিরক্ত হয়	০	১	২	৩
26. হিংসক এবং সবকিছু পেতে চায়	০	১	২	৩
27. দমিয়ে রাখা হুমকি বা অন্যদের ভয় দেখানো	০	১	২	৩
28. শারীরিক মারামারি শুর ু করে	০	১	২	৩
29. সবচেয়ে গুর ুত্বপূর্ণ বা বাধ্যবাধকতা এড়াতে (অর্থাৎ “কনস” অন্যদের) বা সমস্যা থেকে বের হয়ে আসার জন্য মিথ্যে বলা	০	১	২	৩
30. অনুমতি ছাড়া স্কুল থেকে পালিয়ে যাওয়া	০	১	২	৩
31. শারীরক ভাবে মানুষের কাছে নিষ্ঠুর হওয়া	০	১	২	৩
32. কিছু মূল্য আছে এমন জিনিস চুরি করা	০	১	২	৩
33. ইচ্ছাকৃতভাবে অন্যের সম্পত্তি ধ্বংস করা	০	১	২	৩
34. অস্ত্র যা গুর ুতর ক্ষতি করাতে পারে (ব্যাট, ছুরি, ইট, বন্দুক) ব্যবহার করা	০	১	২	৩
35. শারীরিক ভাবে পশুদের প্রতি নিষ্ঠুর হয়	০	১	২	৩
36. ইচ্ছাকৃত ভাবে আগুন লাগিয়ে ক্ষতি করার চেষ্টা	০	১	২	৩
37. অন্য কারো বাড়ি, ব্যবসা, অথবা গাড়ি ভেঙ্গে দেওয়া	০	১	২	৩
38. অনুমতি ছাড়া রাতে বাইরে থাকা	০	১	২	৩
39. বাড়ি থেকে দূরে রাত্রিবাস করা	০	১	২	৩

40. যৌন কার্যকলাপের মধ্যে কাউকে বাধ্য করা	০	১	২	৩
41. ভীত উদ্বিগ্ন বা চিন্ড়িত	০	১	২	৩
42. ভুল করার ভয়ে নতুন কিছু করার চেষ্টা করতে ভয় পায়	০	১	২	৩
43. নিজেকে ছোট মনে করা	০	১	২	৩
44. সমস্যার জন্য নিজেকে দায়ী করা, নিজেকে দোষী মনে করা	০	১	২	৩
45. নিঃসঙ্গ অবাঞ্ছিত বা ভালবাসাহীন অনুভূত হওয়া ও অভিযোগ করা "কেউ তাকে ভালবাসে না"	০	১	২	৩
46. দুঃখিত অসুখী বা বিষন্ন হয়	০	১	২	৩
47. অত্মসচেতন বা সহজে বিব্রত হয়	০	১	২	৩

কর্মক্ষমতা	খুব ভাল	ভাল	গড় ভাল	কিছু সমস্যা আছে	সমস্যাজনিত
48. সার্বিক স্কুল কর্মক্ষমতা	১	২	৩	৪	৫
49. পড়া	১	২	৩	৪	৫
50. লেখা	১	২	৩	৪	৫
51. অংক	১	২	৩	৪	৫
52. বাবা-মায়ের সঙ্গে সম্পর্ক	১	২	৩	৪	৫
53. ভাইবোনের সাথে সম্পর্ক	১	২	৩	৪	৫
54. সহকর্মীদের সঙ্গে সম্পর্ক	১	২	৩	৪	৫
55. সংগঠিত কার্যক্রমে অংশগ্রহণ (যেমন দল)	১	২	৩	৪	৫

APPENDIX-9

Vanderbilt ADHD Parent Assessment Scale –Tamil

வண்டேர்பிளிட் மதிப்ூட்டின் - அளவுகோலை பெற்றோர் தகவலறியும்

இன்றைய நாள் --------குழந்தையின் பெயர் ----------பிறந்த தேதி ----------

மருத்துவமனையின் எண் ---------- பெற்றோர் தொலைபேசி எண்.----------

திசைகள்: ஒவ்வொரு மதிப்ீடு உங்கள் குழந்தையின் வயது பொருத்தமானது என்ன சூழலில்கருதவேண்டும்.

இந்த படிவத்தை பூர்த்தி செய்தபோது கடந்த 6 மாதங்களில் உங்கள் குழந்தையின் நடத்தைகள் பற்றி யோசித்து பாருங்கள். இந்த படிவத்தின் மூலம் நேரம்,குழந்தை கவனத்தில் உள்ளதா / இல்லையா

அறிகுறிகள்		இல்லை	தற்செயலாக	அடிக்கடி	மிகவும் அடிக்கடி
I.	சரியான விதத்தில் கவனம் செலுத்துவதில்லை விவரங்களுக்கு அல்லது உருவாகிறது கவனக்குறைவினால் தவறுகள் அதற்கு உதாரணமா, வுட்டு பாடம்	0	I	2	3
2.	சிரமம் ஆனது கவனத்தை என்ன செய்யப்பட வேண்டி உள்ளது.	0	I	2	3
3.	சரியான விதத்தில் கேட்க தெரியவில்லை பேசப்படும் போது நேரடியாக	0	I	2	3
4.	சரியான விதத்தில் பின்பற்ற கொடுக்கும் வழிகள் மற்றும் தோல்விகள் முடிக்க நடவடிக்கை (இல்லை இதனால் காரணங்கள் அல்லது தோல்விகள் புரிந்து கொள்வதற்கு	0	I	2	3
5.	சிரமம் ஏற்பாடு பணிகள் மற்றும் நடவடிக்கைகள்	0	I	2	3
6.	தேவையில்லை தொடங்க வேண்டிய பணி அது தேவைப்படும் மன முயற்சி	0	I	2	3
7.	இழந்த பொருட்கள் தேவப்படும் பணி அல்லது நடவடிக்கைகள் (பொம்மைகள், பணிகள், பென்சில்கள், அல்லது புத்தகங்கள்)	0	I	2	3
8.	எளிதான திசை திருப்பம் மூலம் குரல்கள்				

	அல்லது மற்ற தூண்டுதல்	0	I	2	3
9.	மறதியானது தினசரி நடவடிக்கைகள் ஆகும்	0	I	2	3
10.	அமையாத கைகள் கால்கள் நெளிந்து இருக்கையில்	0	I	2	3
11.	இலைகள் இருக்கையில் அப்பொழுது ஔதமுள்ள இருக்கை எதிர்பார்க்கப்படுகிறது	0	I	2	3
12.	பற்றி ரன்கள் அல்லது போது அமர்ந்து ஔதமுள்ள அதிகமாக ஏறினார் எதிர்பாக்கப்படுகிறது.	0	I	2	3
13.	சிரமங்கள் விளையாடி அல்லது ஆரம்பத்தில அமைதியான நாடகம் நடவடிக்கைகள்	0	I	2	3
14.	"பயணத்தின்ஜி அல்லது அடிக்கடி போல் இயக்கப்படுகிறதுஜி செயல்படுகிறது மூலம் மோட்டார்	0	I	2	3
15	பேச்சுவார்த்தை அதிகமாக	0	I	2	3
16.	உளறிக் கொட்டிலிருக்கிறது பதில்கள் முன் கேள்விகள் அத்திட்டம் முடிந்துவிட்டது.	0	I	2	3
17.	சிரமம் காத்திருப்பது அவர் அல்லது திரும்புவது	0	I	2	3
18.	குறுக்கீடுகள் அல்லது குறுக்கிடுகிறது. மற்றவர்கள் உரையாடல்கள் மற்றும் I அல்லது நடவடிக்கைகள்	0	I	2	3
19.	வாதாடுகிறார்கள் பெரியவர்களுடன்	0	I	2	3
20.	இழக்கிறது நிதானத்தை	0	I	2	3
21.	தீவிரமாக பொருந்தாத அல்லது பெரியவர்களுடன் செல்ல மறுப்பு	0	I	2	3
22.	வேண்டுமென்றே வெறுப்பார்கள் மக்கள				

		0	1	2	3
23.	குற்றம் சாட்டுகிறார் அவன் அல்லது அவளுடைய தவறுகளை அல்லது தவறான நடவடிக்கைகளை	0	1	2	3
24.	உணர்ச்சிவசப்பட்டு அல்லது எளிதில் எரிச்சல் அடைவது மற்றவர்களிடம்	0	1	2	3
25.	கோபம் அல்லது சீற்றம்	0	1	2	3
26.	எதிராளிகளாலும் மற்றும் பெற வேண்டும் கூட	0	1	2	3
27.	அட்டூழியங்களை அச்சுறுத்தும், அல்லது மிரட்ட மறறவர்களை	0	1	2	3
28.	தொடங்குகிறது உடல் சண்டை	0	1	2	3
29.	பொய்யை கொண்டு பிரச்சனையில் இருந்து வெளியேறுவது அல்லது தவிர்ப்பது கடமையில் இருந்து (அதாவது பதக்கம், மற்றவர்கள்)	0	1	2	3
30.	சோம்பேறி அங்கிருந்து பள்ளியில் (விட்டுவிடுகிறது பள்ளி) இல்லையாம் அனுமதி	0	1	2	3
31.	உடல்ரீதியாக கொடூரமானவர் மக்களுக்கு	0	1	2	3
32.	திருடப்பட்ட பொருட்களின் அதன் மதிப்பு	0	1	2	3
33.	வேண்டுமென்றே அழிக்கின்றான் மற்றவர்களின் சொத்தை	0	1	2	3
34.	பயன்படுத்தும் ஒரு ஆயுதம் அது செய்யும் விளைவு தீவிர தீங்கு (பேட், கத்து, செங்கல், துப்பாக்கி)	0	1	2	3
35.	ஊடல் ரீதியாக கொடூரமானவன் மிருகத்தினிடம்	0	1	2	3

36.	வேண்டுமென்றே ஏற்படுத்தும் நெருப்பின் விளைவு சேதம்	0	1	2	3
37.	உடைக்கப்பட்டவேறு ஒருவரின் வீடு வணிகம், அல்லது கார்	0	1	2	3
38.	தங்கினான் வெளியே அந்த இரவு இல்லையாம் அனுமதி	0	1	2	3
39.	ஓடிவிட்டான் தூரம் இருந்து வீட்டில்அந்த முழு இரவு	0	1	2	3
40.	வற்புறுத்துகின்றான் பாலியல் செயலபாட்டிற்கு	0	1	2	3
41.	பயத்துடன் ஆர்வத்துடன் அல்லது கவலைப்படுகிறார்களென்று	0	1	2	3
42.	அச்சம் காரணமாக புதிய விஷயங்களை அந்த அச்சமே உருவாக்குமே தவறுகளை	0	1	2	3
43.	இது பயன் அற்றது அல்லது தாழ்வு மனப்பான்மை	0	1	2	3
44.	குற்றம் சாட்டுகிறார் சுய பிரச்சனைக்கு,குற்ற உணர்ச்சி	0	1	2	3
45.	தனியாகவோ, தேவையற்றதோ அல்லது அன்பு இல்லாள் குற்றமானதுஜி அது இல்லை ஒருவரும் அன்பு அவன் அல்லது அவள்	0	1	2	3
46.	வருத்தம் மகிழ்ச்சியற்ற அல்லது மன அழுத்தத்துடன்	0	1	2	3
47.	சுய உணர்வு அல்லது எளிதில் அவமானப்படுதல்	0	1	2	3

நிறைவேற்றுதல்		மேன்மையான	நடுத்தரமான	சராசரி	கொஞ்சம் நிச்சயமற்ற	நிச்சயமற்ற
๔๘.	ஓட்டு மொத்த பள்ளி செயல்திறன்	๑	๒	๓	๔	๕
๔๙.	படித்தல்	๑	๒	๓	๔	๕
๕๐.	எழுதல்	๑	๒	๓	๔	๕
๕๑.	கணிதம்	๑	๒	๓	๔	๕
๕๒.	உறவு பெற்றோர் உடன்	๑	๒	๓	๔	๕
๕๓.	உறவு உடன் பிறப்புகளுடன்	๑	๒	๓	๔	๕
๕๔.	உறவுகள் சக உறவினருடன்	๑	๒	๓	๔	๕
๕๕.	பங்களிப்பு ஏற்பாடு நடவடிக்கைகள் (எடுத்துக்காட்டு அணிகள்)	๑	๒	๓	๔	๕

APPENDIX-10

Consent Form-English

CHRISTIAN MEDICAL COLLEGE, VELLORE

INFORMED CONSENT

Informed Consent form to participate in a research study

Study Title: To study prevalence and factors associated with Attention Deficit Hyperactivity Disorder in Children and Adolescents with Epilepsy

Study Number: _____

Subject's Initials: _____ Subject's Name: _____

Date of Birth / Age: _____

……
…

Child's Guardian

(i) I confirm that I have read and understood the information sheet dated _____for the above study and have had the opportunity to ask questions.

(ii) I understand that my ward's participation in the study is voluntary and that I am free to withdraw it at any time, without giving any reason and without my medical care or legal rights being affected.

(iii) I understand that the researchers, the Ethics Committee and the regulatory authorities will not need permission to look at my health records both in respect of the current study and any further research that may be conducted in relation to it, even if I withdraw my consent from the study. I agree to this access. However, I understand that my ward's identity will not be revealed in any information released to third parties or published.

iv) I agree not to restrict the use of any data or results that arise from this study provided such data is used only for scientific purpose(s)

(v) I agree on my ward's behalf to take part in the above study.

Signature (or Thumb impression) of the Guardian.

Date: _____/_____/_____

Signatory's Name: _____ Signature: _____

Or

Signature of the Investigator: _____

Date: _____/_____/_____

Study Investigator's Name: _____

Signature (or the Thumb impression) of the Witness: _____

Date: _____/_____/_____

Name & Address of the Witness: _____

APPENDIX-11

Consent Form-Hindi

क्रिश्चयन मेडिकलकॉलेज, वेल्लोर

अवगत सहमति

एक शोध अध्ययन में भाग लेने के लिये सूचित सहमति पत्र

अध्ययन शीर्षक - मिर्गी व्याधिग्रस्त बच्चों और किशोरों में ध्यान आभाव सक्रियता विकार की व्यापकता और साथ मे जुड़े कारकों का अध्ययन।

अध्ययन नम्बर: _____

विषय के नाम के पहले अक्षर:_____ विषय का नाम:_____

जन्म तिथि/उम्र:_____

.....

बच्चे का अभिभावक

(1) मैंने सूचना सीट, तारीख----------को पढ़ और समझ कर पुष्टि कर लिया है कि मुझे उपर्युक्त अध्ययन और सवाल पूछने का अवसर प्राप्त है।

(2) मैं समझता हूँ कि मेरे वार्ड के अध्ययन में भागीदारी स्वैच्छिक है और मै इसे किसी भी समय, बिना कारण बताय वापस लेने को स्वतन्त्र हूं । इस तरह करने से चिकित्सा देखभाल या मेरे कानूनी अधिकार प्रभावित नही होगे।

(3) मैं समझता हूं कि शोधकर्ताओं, काम कर रहे नैतिकता समिति और नियामक अधिकारियों को, वर्तमान अध्ययन और इसके सम्बन्ध में आयोजित किया जा रहा किसी भी आगे का अनुसन्धान,के सम्बन्ध में अपके स्वास्थ्य रिकार्ड को देखने की अनुमति की जरूरत नहीं होगी, यहाँ तक कि मैं अपनी अध्ययन से सहमति वापस ले लूं फिर भी । मैं इसका उपयोग करने दने के लिये सहमत हूँ । हालांकि मैं समझता हूँ कि मेरी वार्ड की कोई भी जानकारी की सूचना तीसरे पार्टी य प्रकाशन के लिये व्यक्तनहीं होगी।

(4) मैं इस अध्ययन से निकले किसी जानकारी या परिणाम केउपयोग को प्रतिबंधित नहीं करता हूँ यदि यह डाटा केवल वैज्ञानिक उद्देश्यों के प्रयोग के लिये होंगें।

(5) मैं उपरोक्त अध्ययन में भाग लेने के लिये अपने वार्ड की ओरसे सहमत हूँ।

अभिभावक के हस्ताक्षर (या अंगूठे का निशान)

तारीख:_____

हस्ताक्षरकर्ता का नाम:_____हस्ताक्षर:_____

या

अन्वेषक के हस्ताक्षर:_____

तारीख:_____

अध्ययन अन्वेषक का नाम:_____

गवाह के हस्ताक्षर (या अंगूठे का निशान)

तारीख:_____

हस्ताक्षर:_____या

हस्ताक्षरकर्ता का नाम और पता:_____

APPENDIX-12

Consent Form-Bangla

খ্রিস্টান মেডিকেল কলেজভল্লেলং·োরং

অবহিত সম্মতি

অবগত কনসেন্ট ফর্ম একটি গবেষণায় অংশ গ্রহণের জন্য স্টাডি শিরোনাম শিশু এবং মৃগীরোগ সঙ্গে বয়ঃসন্ধিকালের ব্যাপকতা ও মনোযোগ ঘাটতি হাইপার অ্যাক্টিভিটিডিসর্ডার সঙ্গে যুক্ত বিষয়গুলির পড়াশোনা করতে স্টাডি সংখ্যা _____

সাবজেক্টের আদ্যক্ষর ঃ _____ সাবজেক্টের নাম ঃ _____

জন্ম / বয়স তারিখ _____

.....

শিশুর অভিভাবক,

১। আমি নিশ্চিত যে আমি পড়েছি এবং উপরে সমীক্ষার _____ তথ্য শীট বুঝেছি এবং প্রশ্ন জিজ্ঞাসা করার আমি সুযোগ পেয়েছি।

২। আমি ঝুঝতে পেরেছি গবেষণায় আমার অংশগ্রহণ স্বেচ্ছাসেবামূলক এবং যে আমি কোন কারণ ছাড়াই এবং চিকিৎসা বা আইনগত অধিকার প্রভাবিত না করে আমি আমার অনুমতি প্রত্যাহার করতে পারি।

৩। আমি বুঝতে পেরেছি যে গবেষক, পৃষ্ঠপোষকের পক্ষে কাজ করছে। নীতিশাস্ত্র কমিটি ও নিয়ন্ত্রক কর্তৃপক্ষের বর্তমান গবেষণায় এবং কোনও গবেষণা এটি সম্পর্ক পরিচালিত হতে পারে। আমার স্বাস্থ্য রেকর্ডের অনুমতির প্রয়োজন হবে না। এমনকি যদি আমি গবেষণা থেকে আমার সম্মতি প্রত্যাহার করি আমি এই অ্যাক্সেস করতে সম্মতি দিলাম। যাইহোক আমি বুঝতে পারি যে আমার ওয়ার্ডে পরিচয় তথ্য তৃতীয় পক্ষের কাছে প্রকাশিত করা হবে না।

৪। আমি এই তথ্য কেবল বৈজ্ঞানিক উদ্দেশ্য ব্যবহারের সম্মতি দিলাম।

৫। আমি আমার ছেলে/মেয়ের হয়ে উপরিউক্ত গবেষণার অংশ গ্রহণে সম্মতি জানাচ্ছি।

অভিভাবকের স্বাক্ষর (টিপ সই)

তারিখ ঃ

স্বাক্ষরকারীর নাম ..... স্বাক্ষর;

বা

গবেষক, যে ব্যাখ্যা করেছেন

স্বাক্ষর :

ডঃ যোগেন্দ্র সিং তারিখ

সাক্ষী স্বাক্ষর..... বা

তারিখ ঃ

স্বাক্ষরকারীর নাম :

APPENDIX-13

Consent Form-Tamil

கிறிஸ்துவ மருத்துவக் கல்லூரி, வேலூர்

அறிவிப்பு படிவம்

அறிவிப்பு படிவம் பங்களிப்பு ஆராய்ச்சி படிப்பு

படிப்பின் தலைப்பு: முறையான அனுமதி வடிவம் ஒரு ஆய்வு பங்கேற்க ஆய்வு தலைப்பு கால்-கை வலிப்பு குழந்தைகள் மற்றும் வளர் இளம் பருவத்தினருக்கு கவனக்குறைவு அதிகரிக்க கோளாறு தொடர்புடைய நோய்த்தாக்கமும் காரணிகள் படிக்க.

படிப்பு எண் ----------
பாடத்தின் முதல் -------- பாடத்தின் பெயர் ---------
பிறந்த தேதி / வயது, ------------

குழந்தைகள் காப்பாளர்

I. நான் உறுதியாக நான் படித்து மற்றும் புரிந்து கொண்ட இந்த நாள் தேதி --- இதன் மூலமாக படிப்பு மற்றும் வாய்ப்புகள் கேள்விகள் கேட்பதற்கு.

2. நான் புரிந்து கொண்டேன் அதாவது என்னுடைய பிரிவு பங்களிக்கின்றது இந்த படிப்பில் விருப்பத்துடன் மற்றும் அதுமட்டுமல்ல நான் இலவசமாக எப்போது வேண்டுமானாலும் விடைபெற்று கொள்ளலாம் எந்த நேரமும், எந்தவித காரணம் மற்றும் எந்தவித மருத்துவ கவனமும் அல்லது சட்ட உரிமை பாதிப்பு.

3. நான் புரிந்து கொண்ட ஆராய்ச்சி வேறு வேலைகள் பிணியானயியின் பொருட்டு ஒழுக்கமான குழு மற்றும் திட்டம் செய்ய உரிமையாளர்கள் அவர்களுக்கு எந்த வித அனுமதியும் பார்ப்பதற்கு என்னுடைய உடல் பதிவு, இரண்டும் நிலுவையில் உள்ள படிப்பு மற்றும் ஏதாவது வேர் ஆராய்ச்சி அது வேண்டுமானால் நடத்தி தொடர்பு கொள்ளலாம் அப்போது நான் திரும்பி

பெற்று கொள்ள உடன்பாடுடன் பெற்று கொள்ள உதவும் படிப்பு நான் ஒத்து! கொள்கின்றேன். இதை இருப்பினும் நான் புரிந்து கொண்டு என்னுடைய பிரிவுஸி அடையாளத்தை எப்பொழுதும் தெரிவிக்க மாட்டேன. எந்த விவரத்தையும் மூன்றாவது நபரிடம் தெரிவிக்கமாட்டேன். அல்லது வெளிப்படுத்தமாட்டேன

4. நான் ஏற்றுக் கொள்கின்றேன் எந்த வித தடை என்னுடைய விவரங்கள் பயன்படுத்தும் விவரங்கள் அல்லது முடிவுகள் அது எந்தவித விவரங்கள் அறிவியல் பூர்வமாக மட்டுமே மேற்கொள்ளப்படும்.

5. நான் ஏற்றுக்கொள்கின்றேன் எந்த வித தடை என்னுடைய பிரிவின் படி மேற்கூறிய படிப்பில் ஈடுபடுவேன்.
கையொப்பம் (அல்லது) பெருவிரல் உறவினர் / சட்டபூர்வமாக ஏறறுக்கொள்ளப்படுகின்றேன்.

தேதி ---/ ----/ ----
கையொப்பம்நபரின் பெயர் ---------- கையொப்பம்

அல்லது

புலன் விசாரனையாளரின் கையொப்பம்:
தேதி:
புலன் விசாரனையாளரின் பெயர்

பிரதிநிதியான சாட்சி

தேதி ----/ ------/ -----
கையொப்பம் நபரின் பெயர் / கை விரல் ரேகை

APPENDIX-14

Child Assent-English

CHILD ASSENT FORM

STUDY TITLE:Prevalence and factors associated with Attention Deficit Hyperactivity Disorder in Children and Adolescents with Epilepsy.

I am Dr. Yogendra Singh from Department of Psychiatry – CMC Vellore. I am doing a study to figure out the prevalence of Attention Deficit Hyperactivity Disorder (ADHD) in children and adolescents with epilepsy and the associated factors

For this research, we will ask you some questions about yourself and problems related to your behavior. We will keep all your answers private, and will not show them to your family members or teachers. Only people who are working on the study will see them.

No additional injections or operations would be required for this study.

By participating in this study you will not get any extra benefit in terms of the cost of your treatment. However if we diagnose any problems, we would give you the option of treatment from us.

You should know that:

• You do not have to be in this study if you do not want to. You won't get into any trouble with the hospital, teacher, or the school if you say no.

• You may stop being in the study at any time. If there is a question you don't want to answer, just leave it blank.

• Your parent(s)/guardian(s) were asked if it is OK for you to be in this study. Even if they say it's OK, it is still your choice whether or not to take part.

• You can ask any questions you have, now or later. If you think of a question later, you or your parents can contact me at the following phone number or email address.

Sign this form only if you:

• have understood what you will be doing for this study,

• have had all your questions answered,

• have talked to your parent(s)/legal guardian about this project, and

• agree to take part in this research

_____
_
Your Signature Printed Name Date

_____
Name of Parent(s) or Legal Guardian(s)

_____
_
Researcher explaining study
Signature Dr. Yogendra Singh Date

APPENDIX-15

Child Assent-Hindi

क्रिश्चयन मेडिकलकॉलेज,वेल्लोर

बच्चे स्वीकृति प्रपत्र

अध्ययन शीर्षक : मिर्गी व्याधिग्रस्त बच्चों और किशोरों में ध्यान आभाव सक्रियता विकार की व्यापकता और साथ मे जुड़े कारकों का अध्ययन।

मैं डॉ.योगेन्द्र सिंह मनोरोग विभाग- क्रिश्चयन मेडिकलकॉलेज, वेल्लोर से हूँ। मैं मिर्गी व्याधिग्रस्त बच्चों और किशोरों में ध्यान आभाव सक्रियता विकार की व्यापकता और साथ मे जुड़े कारकों का अध्ययन कर रहा हू।

इस शोध के लिए हम आपको कुछ सवाल अपने आपको और अपने व्यवहार से संबंधित समस्याओं के बारे में पूछने होगा। हमें सभी आपके उत्तर गुप्त रखगे और उन्हें आपके परिवार के सदस्यों य शिक्षकों को नहीं दिखायेंगे। केवल जो लोग अध्ययन पर कार्य कर रहें हैं, उन्हें दिखायेंगे।

इस अध्ययन के लिये कोई अतिरिक्त इंजेक्शन या कार्यवाही की आवश्यकता नहीं है।

इस अध्ययन में भाग लेने में, उपचार के लागत के मामले में कोई अतिरिक्त छूट नहीं मिलेगी। जबकि यदि हम किसी समस्या का निदान करें, आप हमसे उपचार का विकल्प लेगे।

आपको पता होना चाहिए कि

- यदि आप अध्ययन में भाग लेना नहीं चाहते है, तो आप इनकार कर सकते है। यदि आप इनकार करते हैं, तो आपको अस्पताल, शिक्षक य स्कूल मे किसी भी मुसीबत का समन नहीं होगा।
- आप किसी समय भी अध्ययन बन्द कर सकते हैं I यदि आप किसी सवाल का जवाब नहीं देना चाहते है तो बस इसे खाली छोड़ दें।
- आपके माता-पिता/अभिभावक इस अध्ययन की अनुमति पूछा गया है। भले ही वे हाँ कहते हैं इसमें भाग लेने का चुनाव आप करेगे।
- आप अभी या बाद में कोई भी प्रश्न पूछ सकते है। यदिआप कोई प्रश्न के बारे मे बाद में सोचते हो, तुम या तुम्हारे माता-पिता फोन नं0 या ईमेल से सम्पर्क कर सकते हैं।

हस्ताक्षर तभी करे जब आप:

- समझ गये हैं तुम इस अध्ययन में क्या करोंगे
- तुम्हारे सभी प्रश्नों के उत्तर मिल गये है।

- तुम अपने माता-पिता/अभिभावक से इस परियोजना के बारे में बात कर चुके हैं और
- इस शोध में भाग लेने के लिये सहमत हैं।

_____

अपके हस्ताक्षर मुद्रित नाम तारीख

_____

अपके माता-पिता/अभिभावक का नाम:

_____

अध्ययन समझाने वाला शोधकर्ता

हस्ताक्षरडॉ योगेन्द्र सिंह तारीख

APPENDIX-16

Child Assent-Bangla

অনুমতি পত্র

শিরোনাম ঃ মৃগীরোগ যুক্ত শিশু ও বয়ঃসন্ধি কালের ছেলে ও মেয়েদের মধ্যে মনোযোগ ঘাতটি ও হাইপার অ্যাক্টিভিটি রোগের প্রাদুর্ভাব ও কারণ সম্পর্কিত গবেষণা।

সি এম সি ভেলোরের আমি সাইকিয়াট্রি বিভাগের ডাঃ যোগেন্দ্র সিং। আমি একটি গবেষণা করছি শিশু ও মৃগীরোগ সঙ্গে বয়ঃসন্ধিকালের এবং সংশি-ষ্ট নিয়মকে (ADHD) মনোযোগ ঘাটতি হাইপার অ্যাক্টিভিটিডিসর্ডারের প্রকোপ নিয়ে।

এই গবেষণার জন্য আমরা আপনাকে আপনার নিজের এবং আপনার আচরণের সাথে সম্পর্কিত সমস্যা সম্পর্কে কিছু প্রশ্ন জিজ্ঞাসা করব। আমরা আপনার সব উত্তর গোপন রাখব এবং তাদের আপনার পরিবারের সদস্য বা শিক্ষককে দেখাতে হবে না। শুধু মানুষ যারা গবেষণা করছেন তাদের দেখাতে হবে।

কোন অতিরিক্ত ইনজেকশনও অপরেশন এই গবেষণার জন্য প্রয়োজন হবে না।
এই গবেষণায় অংশ গ্রহণ করার মাধ্যমে আপনি আপনার চিকিৎসার খরচ পরিপ্রেক্ষিতে কোন অতিরিক্ত সুবিধা পাবেন না। তবে আমরা যদি কোন সমস্যা নির্ণয় কার, তবে আমরা আপনাকে আমাদের কাছ থেকে চিকিৎসার পরামর্শ দিতে পারব।

আপনার জানা উচিৎ ঃ
আপনি চাইলেই এই গবেষণা হবে নইলে হবে না। আপনাকে হসপিটাল, শিক্ষক বা স্কুলের সঙ্গে কোন ঝামেলাতে পড়তে হবে না।

আপনি যে কোন সময়ে গবেষণা বন্ধ করতে পারেন। যদি কোন প্রশ্নের উত্তর দিতে না চান, শুধু এটা ফাঁকা জায়গা রাখুন। আপনার পিতামাতাদের / অভিভাবকদের অনুমতি নেওয়া হবে এবং তার পরেও আপনার অধিকার থাকবে এই গবেষণায় অনুমতি প্রত্যাহারের।

যদি আপনার কোন প্রশ্ন থাকে আপনি জিজ্ঞাসা করতে পরেন। এখন বা পরে। আপনি পরে যদি প্রশ্ন মনে করেন তাহলে আপনি বা আপনার বাবা আমাকে নিম্নলিখিত ফোন নম্বর বা ইমেল ঠিকানায় যোগাযোগ করতে পারেন।

আপনি এই ফর্ম সাইন কর"ন, শুধুমাত্র তখনই যদি –

আপনি এই গবেষণার জন্য কি কাজ করা হবে বুঝতে পারেন

আপনার সব প্রশ্নের উত্তর পান

আপনার বাবা-মা / আইনগত অভিভাবকের সাথে এই প্রকল্প নিয়ে কথা বলেছেন

এই গবেষণার অংশ নিতে সম্মত হয়েছেন

আপনার স্বাক্ষর	মুদ্রিত নাম	তারিখ

অভিভাবক অথবা আইনগত অভিভাবকদের নাম:

গবেষক, যে ব্যাখ্যা করেছেন স্বাক্ষর	ডঃ যোগেন্দ্র সিং	তারিখ

APPENDIX-17

Child Assent-Tamil

குழந்தை ஒப்புதல் படிவம்

படிப்பின் தலைப்பு: முறையான அனுமதி வடிவம் ஒரு ஆய்வு பங்கேற்க ஆய்வு தலைப்பு கால்-கை வலிப்பு குழந்தைகள் மற்றும் வளர் இளம் பருவத்தினருக்கு கவனக்குறைவு அதிகரிக்க கோளாறு தொடர்புடைய நோய்த்தாக்கமும் காரணிகள் படிக்க.

நான் டாக்டர் யோகேந்திரசிங் என்னுடைய துறை மனநல மற்றும் நரம்பியல் துறை சி.எம்.சி வேலூர் நான் என்னுடைய படிப்பின் தொடர்பான தலைப்பு நோய்த்தாக்கமும் குழந்தைகள் மற்றும் வலிப்பு வளர் இனம் பருவத்தினருக்கு கவனத்தை அதியியக்கக் கோளாறு தொடர்பான காரணிகள் பற்றிய ஓர் ஆய்வு

இந்த ஆராய்ச்சியில் நாங்கள் சில வினாக்களை உங்களிடம் தொடுப்போம் மற்றும் சிக்கலின் விளைவான உங்கள் செயல்பாடு. நாங்கள் உங்களுடைய எல்லா பதில்களையும் பாதுகாப்பாக, மற்றும் இதை யார் இடம் காண்பிக்கமாட்டோம். உங்களுடைய குடும்பத்தினரிடமும், அல்லது ஆசிரியரிடமோ.

இல்லை கூடுதலான ஊசியோ அல்லது அறுவைசிகிச்சையோ இதற்கு தேவைப்படும். இந்த படிப்பில் இந்த பங்கேற்பின் சம்மந்தமான படிப்பின் உங்களுக்கு எந்த கூடுதலான மதிப்பு இந்த பருவத்தின் எந்த வித கூடுதலான தொகையான சிகிச்சை அளிக்கப்படாது இருப்பினும் நாங்கள் அறிந்தோம் ஏதாவது பிரச்சனை, நாங்கள் உங்களுக்கு வாய்ப்புக்கான சிகிச்சைகளை அளிப்போம்.

நீங்கள் தெரிந்து கொள்ள வேண்டியது:

- *நீங்கள் இந்த பாடப்பிரிவில் தான் இருக்க வேண்டும் என்று இல்லை. உங்களுக்கு விருப்பம் இருந்தால் நீங்கள் எந்த வித தொந்தரவும் கொடுக்க கூடாது மருத்துவமனையில், ஆசிரியர்கள், அல்லது பள்ளிகள் இல்லை என்று சொல்ல.*

- நீங்கள் நிறுத்திக் கொள்ளலாம் படிப்பில் இருந்து எந்நேரமும் உங்களுக்கு ஏதாவது கேள்விகளுக்கு விடையளிக்க, விருப்பம் இல்லை என்றால் அப்போது விட்டு விடுங்கள் வெறுமையாக.
- உங்கள் பெற்றோர்(கள்) / பாதுகாப்பாளர்(கள்) உங்களிடம் சரி என்று உங்களை இந்த படிப்பை பற்றி இருந்தாலும் இதன் பின்பு கூடஸி சொல்லலாம் சரி, எல்லாம் உங்களுடைய விருப்பத்தின் படி வேண்டும் என்றால் எடுத்து கொள்ளலாம். இல்லை என்றால் விட்டு விடலாம்.
- நீங்கள் எந்த வித கேள்விகளும் நீங்கள் இப்பொழுதும் இதன்பின்பு கேட்கலாம். நீங்கள் சிந்தித்து பின்பு நீங்கள் அல்லது, உங்கள் பெற்றோர் தொடர்பு கொள்ள குறிப்பிட்ட தொலைபேசி அல்லது மின் அஞ்சலில் தொடர்பு கொள்ளலாம்.

கையொப்பம் இடவும் இந்த படிவத்தில் நீங்கள்

- நீங்கள் புரிந்து கொண்டர்களா என்ன செய்ய வேண்டும் இந்த படிப்பின் மூலம்.
- நீங்கள் எல்லா வித கேள்விகளுக்கும் பதில் அளித்து விட்டர்களா.
- நீங்கள் உங்கள் பெற்றோர் இடம் (அல்லது) / உறுதிபூர்வமான காப்பாளர் இதை பற்றி செயல்திட்டம், மற்றும்
- உறுதிப்பூர்வமாக ஏற்றுக் கொள்கின்றேன். இந்த ஆராய்ச்சியை

உங்கள் கையொப்பம் அச்சின் பெயர் தேதி

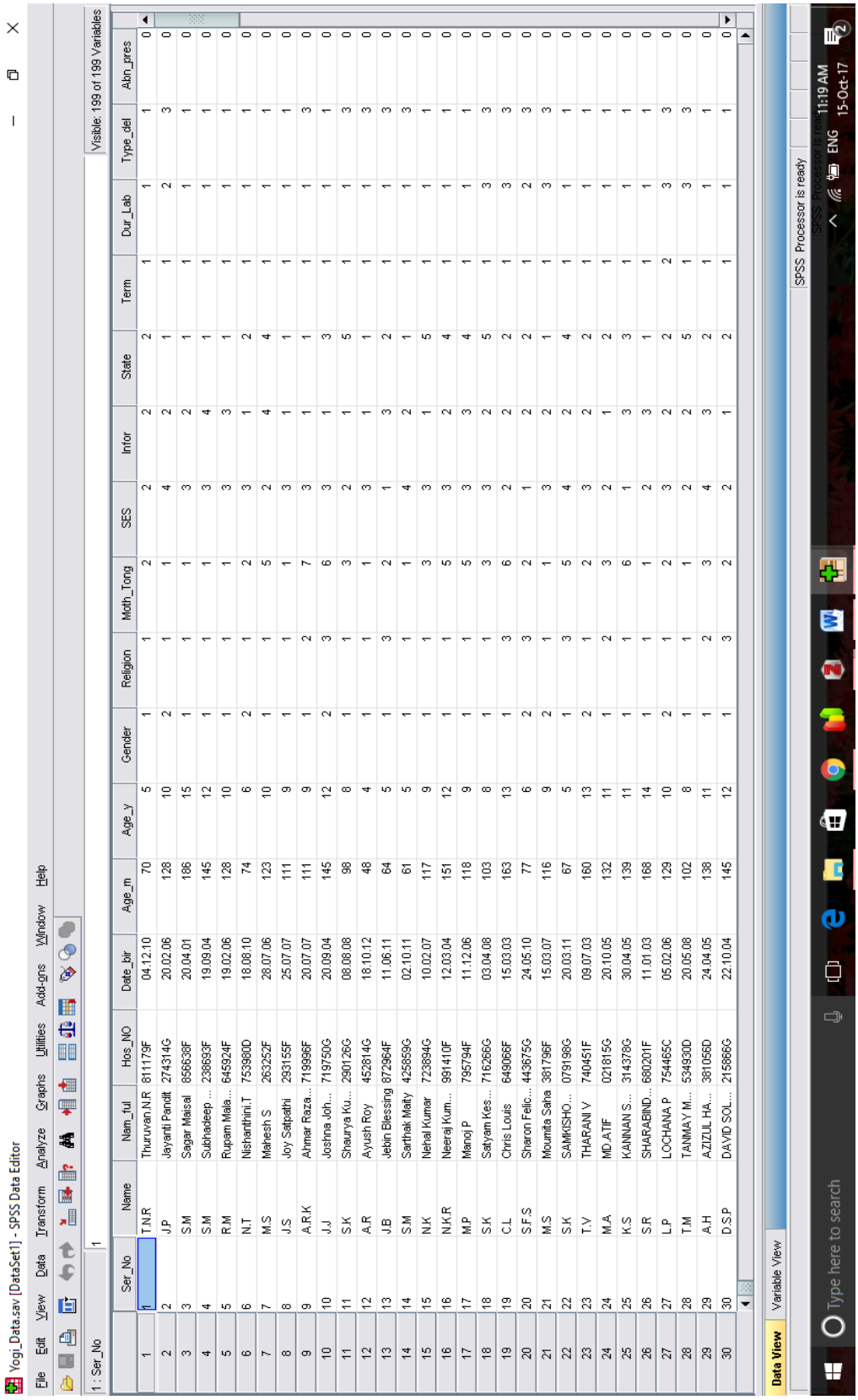
பெற்றோர்களின் பெயர் அல்லது உறுதிபூர்வமான காப்பாளர்(கள்)

ஆராய்ச்சி விவரிப்பு படிப்பு,

கையொப்பம் டாக்டர். யோகேந்திரசிங் தேதி

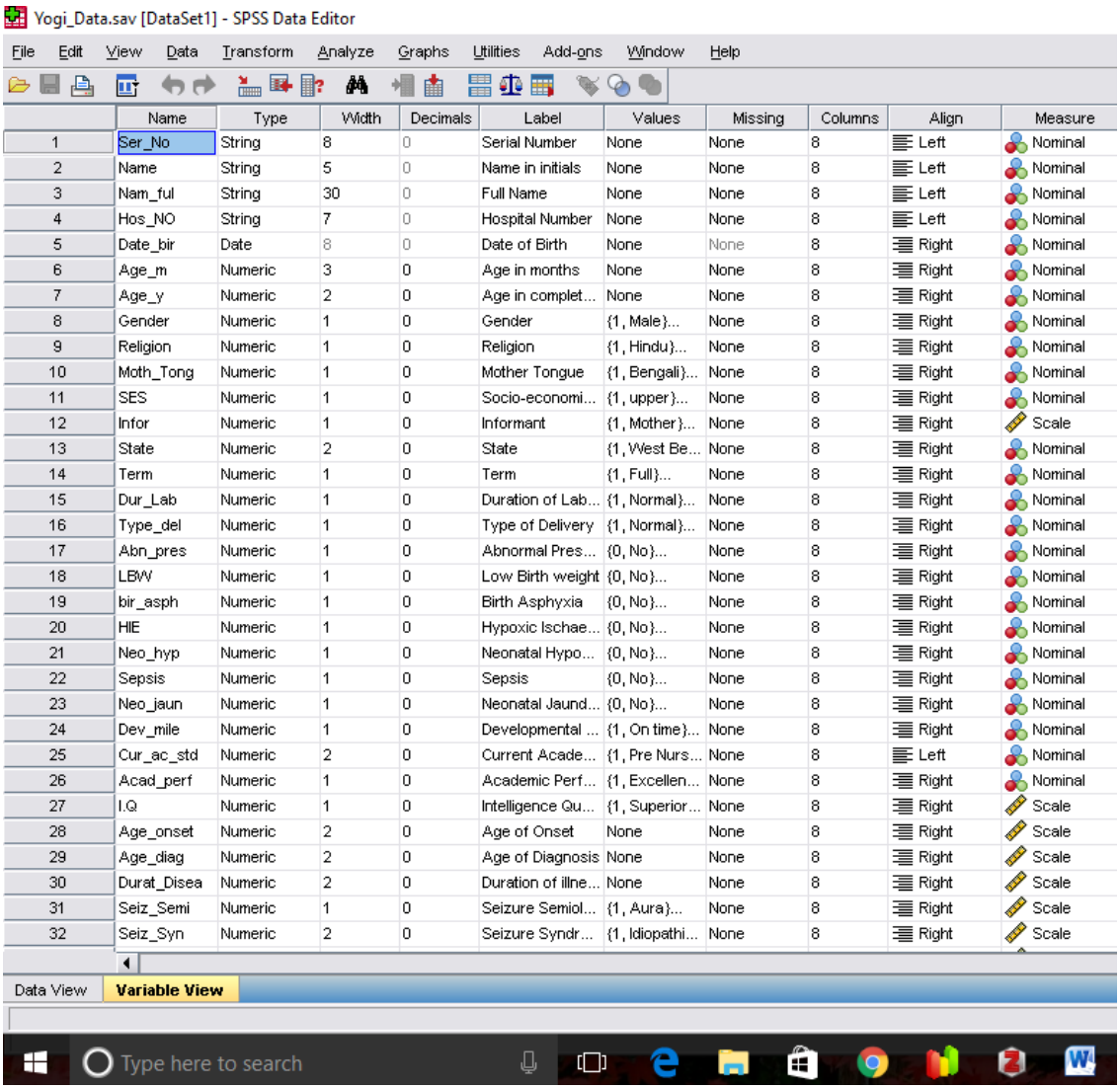
APPENDIX-18

Data View



APPENDIX-19

Data View


Yogi_Data.sav [DataSet1] - SPSS Data Editor

File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help

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20	HIE	Numeric	1	0	Hypoxic Ischae...	{0, No}...	None	8	Right	Nominal
21	Neo_hyp	Numeric	1	0	Neonatal Hypo...	{0, No}...	None	8	Right	Nominal
22	Sepsis	Numeric	1	0	Sepsis	{0, No}...	None	8	Right	Nominal
23	Neo_jaun	Numeric	1	0	Neonatal Jaund...	{0, No}...	None	8	Right	Nominal
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29	Age_diag	Numeric	2	0	Age of Diagnosis	None	None	8	Right	Scale
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32	Seiz_Syn	Numeric	2	0	Seizure Syndr...	{1, Idiopathi...	None	8	Right	Scale

Data View | Variable View

Type here to search